The Authority of Industry

IRON TRADE REVIEW

National and International

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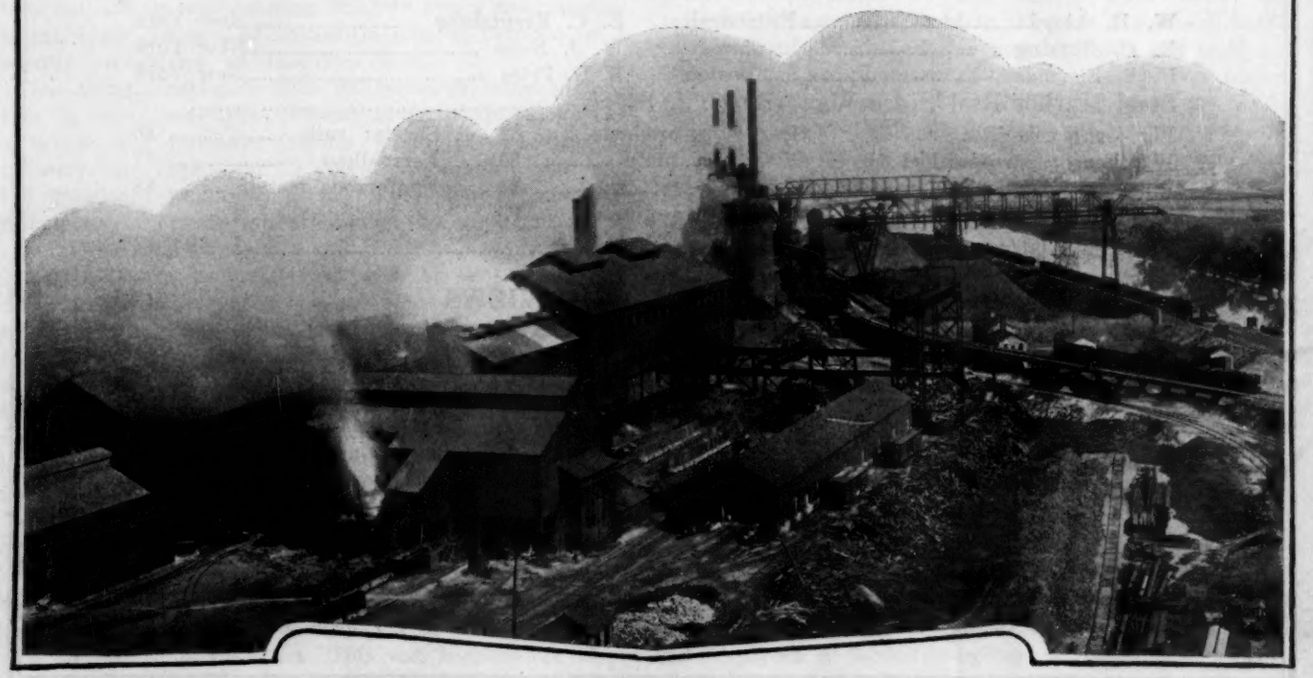
Industry Begins A New Day

By C. J. Stark

ON the threshhold of the second quarter of the twentieth century, iron and steel, the symbol of American industrial power, looks toward a new and greater destiny. For steel, the past 25 years have represented the truly creative era. In that time it has faced and has achieved the major objective of organizing and intensifying production on the greatest scale the world has ever known, expanding capacity fivefold in so doing. It has met and is sustaining a rate of national progress and an enrichment of individual standards that is without parallel in all history. Its contribution to the elevation of general culture and wellbeing is unsurpassed.

The future now is summoning all industry to a fresh day, charged with new problems, with greater opportunities for human service. Better methods of distribution, production for quality, and more effective application of the products and materials of industry are among the questions challenging initiative, courage and scientific skill. The race will be run and won by the exercise of new and untaxed forces.

Twenty-five years from now when American industry gives an accounting, its record must have kept faith with the best traditions of its glorious past.



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Production Figures Tell Story of Big Steel Year

	1925 Estimated	1924	Best previous record
Steel Ingots and Castings	45,500,000	37,931,939	45,060,607*
Pig Iron	36,530,000	31,405,790	40,361,146**
By-Product Coke	39,800,000	33,983,568	37,597,664†

Steel and pig iron in gross tons; coke in net tons.
*1917 **1923 †1923

Steel Market Best Since War

By C. J. Stark

TWICE consecutively the iron and steel industry is beginning a new year with prospects which for a reasonable period ahead may be described as nothing short of brilliant. In 1925 such a favorable outlook was converted into a reality in the respect by which business conditions customarily are appraised—that of volume. The physical measure of the year's trade was the greatest in the history of the industry. Yet judged from the usual concomitant of financial returns, the year did not fulfill normal expectations. The margin of profits was relatively small in proportion to turnover, reflecting at once the large productive capacity and the resulting keen competition. On the basis of production to theoretical capacity, 1925 may be regarded as about an 80 per cent year. By the same standard, 1924 scaled about 66 per cent.

The new year of 1926 is beginning with fundamental conditions, on a whole, even more favorable than 12 months ago. Some of those chief elements of steel demand, notably the agricultural and railroad fields, have extend their improvement in the year and now are more in step, relatively, with the more prosperous and vigorous factors of consumption. This more nearly complete condition of business equilibrium is the strongest feature of present conditions. A year ago, post-election enthusiasm was coloring brightly hopes and expectations; today an equally optimistic tone is founded on a clearer recognition of tangible needs.

The things that gave 1925 its record-breaking production in steel were the unusual scope of building construction, the increased buying power of the farming industry, the high level of automotive manufacture and the broadened requirements that have flowed from miscellaneous enterprise as stimulated by a condition of general business vigor.

DEMAND for iron and steel was the best distributed since the war; yet it was not wholly balanced in accordance with those factors which traditionally have gone to make up a big steel market. The outstanding gap in the rank of group requirements was that of railroad buying, particularly with respect to equipment, additions or replacements. Car orders in 1925 totaled only about 75,000 compared with 145,000 in 1924, and an average of 118,000 for the previous ten years.

This lack of representative buying by the railroads is counted upon as a leading potential factor for taking up in 1926 any developing slack in the demands for building construction or other main channels.

Effects of the proscribed abolition of Pittsburgh plus were minimized in the year. This was because the market was so broad that selling freedom by the individual producer was not as restricted as expected. Pittsburgh prices, as in the past, largely have been made the general basis of quotations. Nevertheless many independent mills have felt the localizing force of the change.

THE steady check under which iron and steel prices have moved in the year may be clearly read from IRON TRADE REVIEW composite of 14 leading iron and steel products. The year ended with the index at $39.24. This was below the figure of $40.70 one year ago and of $43.02 two years ago notwithstanding the heavy rate of buying. In fact it was not until in September that the first gain was made from the low point of $37.21 to which the composite had fallen steadily from February. The high figure of the year reached in that month was $41.22.

Production in the year ran a course virtually paralleling 1924 but the changes were much less severe. Starting on the upgrade in January, the top was reached in March and the ebb continued until August, with a fall of 29 per cent. A year previously the range from high to low was 72.6 per cent. From July works activities recovered steadily until in December they were practically full and the industry then was operating at the highest rate in history, or over 50,000,000 tons of ingots annually. Due to heavy operations in the first and last quarter and the moderate contraction in other months, steel output established a new high record in the year and is estimated to have been about 45,500,000 tons of ingots and castings. The previous award was 45,060,607 tons in the war period of 1917. Pig iron, however, failed to keep step until steel had totaled 36,530,000 approximately which was exceeded by five previous years, 1923, 1920, 1918, 1917 and 1916.

NO MAJOR development of the year so influenced the character of the market or appears of deeper significance than the general pursuit of hand-to-mouth buying policies which gradually had been taking form since the debacle of 1921. Probably not in modern history has the iron and steel industry been possessed of such live or liquid order books, or those so representative of definite needs. Large production capacity plus unexampled delivery service by the railroads made this policy. As a result stocks and inventories were kept at the minimum.

At the beginning of the New Year the mills and furnaces were comfortably filled with orders and shipments were going forward in heavy volume. Yet occasional gaps were appearing in mill schedules and there was no evidence of tightness in supplies with the possible exception of semi-finished material. This fact has imparted a flexibility to the situation and a tone of conservatism which is the situation's strongest element.

1926 Will Be Big Year

Say: Ray Vance, President, The Brookmire Economic Service, Inc.
John W. O'Leary, President, Chamber of Commerce of the United States

Fundamental Factors Point To Good Business In First Half

By Ray Vance

OCCASIONALLY there arises a business situation in which the outlook is so clear that practically all observers are likely to be in substantial agreement as to the probable developments of the immediate future. Such an agreement is likely to be found in all forecasts of general business developments covering the first three or four months of 1926.

The prosperity with which we closed 1925 has been built upon a foundation of many causes but most of us will agree upon at least four outstanding reasons for this prosperity.

1. *A widespread confidence that the present Federal administration will at all times seek to help rather than to obstruct business activity.*
2. *A banking situation which is capable of carrying any reasonable amount of credits.*
3. *A fairly good foreign market for exportable American products.*
4. *The greatest building boom that the United States has ever seen.*

Other causes such as the efficiency and freedom of railroad transportation, the boom in the motor industry, or the tremendous growth of selling in instalment payments might be mentioned but to me it seems that these things are in themselves outgrowths of the four more fundamental factors.

Most important of all of the four causes of prosperity during 1925 has been the building boom. In this one factor it is possible to be optimistic about the next few months with more certainty than in the case of any of the others. Contracts already placed, for which financial provision has already been made, guarantee active construction work throughout the coming winter and early spring with as much certainty as any human activity can ever be guaranteed in the future.

Then if we take some of the other things that seem to be results of the more fundamental ones, the outlook for the next few months is decidedly bright. No matter what may happen to the sale of motor cars and trucks throughout the year 1926, there is no doubt that present optimism will cause manufacturers to maintain high productive schedules until after the spring season has been tested. It is impossible to go on applying this to all industries, but we might practically apply it as a blanket statement to every industry which has been genuinely prosperous during 1925.

Many business observers, including a great number who were extremely pessimistic 15 months ago, now believe that the United States has started on a business boom which will last three years or possibly five years without any serious interruption. Such a belief seems to me to have no justification in actual conditions. In the first place the changes of business fundamentals are so rapid, that what men call "belief" that prosperity is to go on uninterruptedly for three or five years never can be more than a hope based upon their own wishes. In the second place the developments of the past year have introduced some very sore spots into the fundamental business situation. These have not appreciably affected the favorable political situation, neither have they had any serious effect upon the favorable banking situation. The bad spots developed are:

1. *That the rehabilitation of Europe has reached a point where European producers of manufactured goods are not only sending greatly increased quantities of goods to compete with American products in the home market, but are also becoming very active competitors in the markets of Asia and South America where American exporters had a relatively open field a year ago.*

2. *The plan of selling on instalments which did so much to start the movement of business in early* 1925 *has now been carried by many sales organizations to a point where it promises to become a positive menace to business prosperity. The National Association of Motor Finance Corporations reports that where automobiles are sold on less than* 25 *per cent down payments, more than* 10 *per cent of the contracts are defaulted, yet a large percentage of the present selling plans offer to sell a car on that basis, and the finance corporations state that a large percentage of recent sales are for down payments even smaller than those mentioned in the published plans. The situation in selling other lines of goods under such plans appears to be just as bad if not worse than that in the automobile field.*

3. *The building shortage carried forward from the war years and the years immediately following the war, seems to have been almost entirely made up during the year* 1925, *and in its place we have had in recent months a speculative building campaign which is beginning to tie up funds in buildings that will not be needed for several years into the future. In addition to this there has come*

into existence a speculation in vacant urban and suburban real estate, comparable to nothing in recent experience except the speculation in farm lands during the period 1917 *to* 1919.

In spite of the justified confidence in political conditions, in spite of the favorable transportation situation and in spite of the favorable banking situation, these unfavorable factors are reasonably certain to bring about a decided business reaction in much less than three years. It is even possible that the combination of excessive imports, bad credits from overdone instalment selling and a condition of frozen capital resulting from the real estate speculation, may bring about a rather severe depression. The important question now is how soon is such a reaction likely to begin.

By looking only at the unfavorable conditions just noted one might easily get the impression that we are on the verge of such a business reaction. It is easily possible that it may be beginning before we have passed the middle of the year, but so far as I can judge the present situation, there is as yet no definite evidence when it will begin. To me the two points worthy of emphasis in looking forward toward the year 1926 seem to be:

1. *We may look forward with considerable confidence to a period of high business activity and fairly good profits, which should at the least cover most of the first half of* 1926.

2. *The unfavorable developments of the past few months have been strong enough so that we are not yet justified in the expectation of a similar prosperity during the last half of the year. There is as yet no justification for saying that conditions will not be as good, but wherever possible general business plans for that part of the year should be delayed until the developments of the winter throw further light upon its probabilities.*

The iron and steel industries are notably laggards in either the upswing or the downswing of activity and prices. In spite of the fact that the year 1925 has been one of general prosperity, iron and steel output has only recently risen to high levels. The unfilled orders of steel companies are still low and prices have made very little response to the improvement in the market for their products. I should be inclined to go a little further into the future in predicting a high level of activity for this industry, saying that the earliest possible date for a reaction would not come earlier than the middle of the year, and that rising prices are likely to be seen until at least the middle of the summer.

American Business Can View New Year With Confidence

By John W. O'Leary

A RECORD year for the iron and steel industry has come to an end. In spite of the high rate of production, stocks of material in the hands of producers and consumers are low. Current demand displays every indication of continuing, and with consumers of a mind to build up stocks to a basis more nearly commensurate with the present rate of consumption, there appears to be no reasons why the present activity should not continue well into 1926.

The outlook for the iron and steel industry parallels that of American business in general. Confidence everywhere is marked. Few years in our history have been more prosperous than 1925. In many lines of endeavor it has been a record year. Yet in practically all lines business is getting away to a better start for 1926 than it did for 1925. American business can well look into the New Year with confidence.

The United States appears to be entering a period of peacetime stability. An increasing proportion of the population is sharing more generously in the comforts of life. Our taxation system is approaching a normal basis. We are acting in concert to eliminate waste from production and distribution. Conditions abroad are generally improved.

In the year just ended steel ingot production reached a new high level, and without any strain upon the industry. Prices have moved within narrow limits, thereby making for that stability most desirable for undisturbed business. Week after week railroad freight car loadings exceeded the million-car mark. The building industry added approximately five billion dollars to our wealth. Our capital reserves have been augmented by commendable savings and investments.

The lot of the farmer has improved in the past year. Business generally is aware of its dependence upon favorable conditions in agriculture and the farmer has been a heavier buyer of all classes of merchandise. Production has struck a better balance and the net return to the farmer has increased.

In the international situation there are new evidences of stability and the horizon has been cleared of many clouds. Funding operations have been inaugurated by almost all of our foreign debtors. That France will join the ranks appears probable. There can be no stabilization at home without tranquility abroad.

A more constructive attitude is to be discerned in congress. At the last session no major legislation regulating or restricting legitimate business was enacted. The administrative and legislative policies of the federal government reflect a new confidence, a better understanding of business. There is less of an inclination on the part of business to pass its economic problems along to Washington for solution.

We should be alert to avoid the temptations of prosperity. It is a hopeful sign that the country's merchants are watching their inventories more closely than in previous periods of good business. The best insurance policy business can buy to protect from the perils of booms and slumps is careful buying, careful effort to avoid inflation and concerted effort to avoid waste. Our present prosperity is largely within our own keeping, and we give evidence of being conservators of it.

Nation's Needs Tax Production

Industry Rises To Great Level of Activity in 1925—Well Balanced Factors Support Genuine Prosperity As New Year Begins—Start Is Auspicious

By JOHN W. HILL

NINETEEN HUNDRED AND TWENTY FIVE was distinguished by many new peaks of business activity. Its greatest achievement was a high plane of prosperity supported upon a solid base of well balanced conditions.

New standards of measure for production, distribution and consumption sprung up during the year. The powerful elements of good employment, improved business profits and better agricultural conditions combined to form the most impressive exhibition of purchasing power the country has ever witnessed.

The year saw the flowering of factors making for genuine good times which had their roots in the recovery beginning in 1924. That year brought sweeping advances for grain prices and lifted the farmer out of his half-decade of despondency. It brought the beginning of European recuperation and the capsizing of the ship of political radicalism. Nineteen twenty five continued and consolidated these gains.

Within the last 12 months, agricultural improvement has spead from grain to livestock and other branches of the great fundamental industry. Except for certain sections of the Western corn belt, where there is a surplus of corn, farmers generally are enjoying fair prosperity. Their purchasing came as a fresh stimulating force to trade last year. It promises to remain equally potent in 1926.

RECORD-BREAKING activities became almost commonplace last year. They were seen in the output of steel, of automobiles, of cement, and of lumber. They were seen in building which passed all prediction and precedent, in bank clearings and stock market transactions which reached volumes of incredible size, and in freight loadings and railroad earnings of unrivaled totals. The consumptive needs of the nation were enormous.

Almost every factor which in the past has been associated with truly good times is now present. Ample credit supplies, active building, prospering railroads, widespread employment, farm improvement, enormous consumer demand, good export buying, and a helpful rather than hostile attitude of government toward business—all these are current forces.

Of these influences in this extremely well balanced situation that of credit is one of the most fundamental. The over-flowing supply of banking resources has diminished and may continue to diminish under the drain of rising demands. Interest rates have advanced slightly. Yet the supply of credit is so abundant that neither stringency nor sufficiently high loan rates to check business are in view for 1926.

From present indications most of the other factors may remain on the favorable side of the account for some months to come and possibly throughout the year. Chief uncertainty surrounds the building industry, the automobile industry, and the effect upon business activity of instalment selling.

THIS has been called a construction prosperity. But now in view of the prolonged duration of the boom, and the growing indications that many sections of the country are being over-built, a decline in construction is one of the probabilities which must be considered for 1926. Undoubtedly, if there were no offsetting factors, this might have an adverse effect upon the course of general business.

But there are offsetting forces. One of these is the prospect of greatly increased railroad buying. High earnings and big traffic have combined to give railroads the need and the finances for new equipment. This prospect for large buying seems all the stronger because of the meager purchases by the roads in 1925. This outlook gives weight to the indication of an active year for iron and steel.

Automobile production climbed to great heights in 1925. This was an index of the country's buying power and of the broadening use of instalment selling plans. Whether or not the country can continue to absorb new automobiles at the 1925 pace without interruption remains to be seen. The probability is that there may be some check in 1926.

The year brought an amazing expansion of the application of instalment selling. Both good and evil is seen in the practice, but its chief evil lies in its abuse. Any persistent misuse of it would adversely affect the automobile industry as well as many others. So far these misapplications, though present in some sections, have not spread to a serious extent.

DURING the year the country's engine of industry has been kept under control by the introduction of the revolutionary business practice of fitting production to demand. Buyers have refrained from speculative purchases. Producers have held a rein over outputs. This has had two important results; there are no overhanging surpluses of goods; prices, in the main have had no violent advance.

Hand-to-mouth buying, however, is not being followed with blind adherence. Forward commitments up to three months are being made in the iron and steel industry, and in others, more confidently. Yet future ordering is being measured by expected actual needs, and not by speculative hopes. If business men thus continue to keep their feet on the ground prosperity need not soon be doomed.

Summing up, the impetus of present prosperity and the well balanced forces which has caused it clearly assure its continuance for the first half of 1926. During the last half there are possibilities of diminished activities in building and some other lines, but at the same time offsetting supporting influences are promised in better railroad buying and good agricultural demands. Prospects are favorable for a year that will show a good average of activities in most lines of trade and industry. Steel output may again be record breaking.

Group Rivalry Spurs Industries To Renewed Marketing Activity

By E. L. Shaner

AMERICA is reaping the harvest of its campaign against waste. The seed of national efficiency, first sown by Herbert Hoover and others five years ago, has taken firm root and spread throughout the country, arousing manufacturers, distributors and consumers to the need of greater economy. Today practically every group is participating in what really has become a public movement for higher efficiency.

Organized on loosely drawn lines and directed toward the elimination of waste in all phases of industry, this campaign has served to form the spotlight of public opinion on certain critical weaknesses in the nation's commercial fabric. Outstanding among its revelations is the inefficiency of distribution processes, as compared with those of production. Gradually business men, engineers, industrial executives and others have been made to realize that the distribution problem has been sadly neglected and that it deserves special, intensive study.

But while this general recognition was one of the significant developments of 1925, it does not represent the sum total of progress made in that year in reducing waste in distribution methods. In certain industries, manufacturers for the first time are directing their resources to better marketing. Executives are co-operating more freely than ever before in supplying statistics, participating in simplification and standardizing programs, and working harmoniously for the establishment of codes of ethics and other guides to better business practice. All of these progressive steps are interlaced with the distribution problem and contribute to its solution.

BY the decisions in the maple flooring and cement cases, legitimate group functions are defined. The trade association offers the small concern advantages once held only by the largest.

PERHAPS the most noticeable tendency in the entire maze of distribution developments is found in the growth of group competition. Following the example set by associations of manufacturers in the building material field, producers and fabricators of metal products now are developing markets, promoting sales and dispensing service through group agencies.

Undoubtedly the growing popularity of collective action as against individual effort in trade extension work results not only from revised ideas on marketing but also from the instinct of self-preservation. For many years steel producers and fabricators stuck religiously to their operating problems, while the manufacturers of cement, hollow tile, brick, limestone, wall board, composition roofing and numerous other competitive materials were developing new markets. Not until recently did it dawn on the steel people that these activities constitute a menace to steel. Now most of them realize that the slow gradual flow of propaganda from the offices of the associations of manufacturers of building materials has made a deep impression on the buying public. The publicity work of many of these groups has been of high order and has proved effective. Now makers and fabricators of steel are turning to this new weapon and are finding it potent.

Although associations of manufacturers in the iron, steel and metal-working industries are not new, their activities in the field of trade promotion are of comparatively recent origin. Most of the earlier associations devoted their attention to production, labor, legislation, statistics, etc., rather than to marketing. In a number of cases feeble efforts were made to seek new uses for certain products and to stimulate demand, but invariably these campaigns fell through because of incompetent supervision or inadequate financial support.

One of the first organizations in the metal field to undertake trade promotion on a large scale was the Copper and Brass Research association, which now is entering upon its fifth year. Its membership represents 90 per cent of the copper mining operations and 95 per

cent of the copper, brass and bronze fabricating industry. Since the formation of the association, the consumption of copper has increased more than 100 per cent, which is attributed in part to the advertising, educational literature, technical and marketing research, service to dealers and other activities of the association.

During the past year the sheet steel trade extension committee has made notable progress in creating new markets. This organization, which represents 29 sheet mill interests, has been operating less than 18 months yet in that brief period it has launched an effective advertising campaign, engaged in the publication of two monthly magazines, issued several booklets on the service of sheet steel, conducted a contest for artistic designs of metal garages, and extended liberal assistance to sheet metal contractors, fabricators, jobbers, dealers and consumers. The net result to date has been the receipt of inquiries leading to known orders aggregating more than $3,000,000, the securing of considerable additional business, the value of which cannot be determined, the winning of the good will of hundreds of distributors and the creation of numerous new applications for sheets. The activities of the committee were set forth in detail in the Dec. 3 issue of IRON TRADE REVIEW.

The cast iron pipe publicity bureau, Chicago, has done good work in attracting attention to the merits of cast iron pipe. Manufacturers of this product credit the publicity and advertising conducted by the bureau for part of the increase in sales. Effective results also have been obtained by the Association of Manufacturers of Chilled Car Wheels in its campaign to acquaint users with the merits of its chilled product. The American Malleable Castings association and the National Machine Tool Builders association have performed remarkable services for their industries, but thus far their principal efforts have been directed in channels other than that of marketing. However, the malleable foundrymen, in raising their standards of quality and adopting the "certificate" plan for approved castings, have solved a production problem which is closely linked with sales and service. The tool builders are now entering a period when its association is giving more attention to marketing, and its slogan "Builders of the Master Tools of Industry" undoubtedly is the forerunner of a more intensive program of market analysis.

"Do It Electrically" urges the Society for Electrical Development, Inc., one of many groups promoting a wider use for their products

One of the most enterprising associations in the iron and steel field is the American Institute of Steel Construction. It came into being late in 1921 at a time when the manufacturers of practically every material of construction except fabricated steel were saturating the public with propaganda favorable to their products. The institute's first accomplishment was the publishing of a new specification for fabricated steel which wiped out a number of engineering absurdities of 30 years standing. It also developed a code defining the obligations of buyer and seller of fabricated steel. In the four years of its existence it has created a "consciousness" for steel in construction, has brought about the adoption of its specification in most of the large cities in the country and in other ways has served its industry so effectively that at its last annual meeting its members authorized a substantial increase in expenditures for the institute's work. The organization soon will embark on a comprehensive educational campaign, embracing marketing research, service and advertising.

FROM the foregoing it is apparent that few of the organizations in the metalworking field have been devoting their attention to trade extension long enough to show tangible results. Therefore to determine whether or not joint marketing efforts are successful, it is necessary to review work of associations in the building material field, where group rivalries have existed for many years.

The stimulus given to the use of concrete by the Portland Cement association is well known. The popularity enjoyed by this product certainly could not have been won by the individual effort of cement manufacturers.

Brick makers were slower to sense the possibilities in group action. According to the *Commerce Yearbook*, the production of common brick dropped gradually from about eight billion brick in 1913 to three and one-half billion in 1918. Since that time, except for a slight recession in 1921, it has leaped to more than 13 billions. The significant point in this is that the turning point after a long gradual decline came in 1919 when the advertising and promotional work of the Common Brick Manufacturers Association of America became effective. While part of the 300 per cent increase in consumption is due to postwar building activity, much of it is credited by brick manufacturers to the association's work. For many years, brick, like steel, was considered a necessity in building construction of such merit that it required no advertising or sales promotion. Fortunately, group activities were begun just in time to prepare the common brick industry for the enlarged opportunities of the past few years.

Almost the same story can be told of face brick. From 1920, when the American Face Brick association launched its promotion campaign, the consumption of face brick increased from less than 800,000,000 annually to almost two billion brick in 1924.

A decade ago gumwood was practically unheard of, but today, due

largely to the publicity and advertising of the Hardwood Manufacturers institute, this wood is utilized widely in furniture and interior trim. Many other woods have been popularized by co-operative advertising, including Arkansas soft pine, northern hemlock and hardwood, southern cypress, western pine, maple flooring, oak flooring, mahogany, red cedar and birch.

In some cases group market promotion has created demand for grades of products not previously utilized. The activities of the Indiana Limestone Quarrymen's association not only have increased the demand for Indiana limestone, but have developed markets for grades of stone for which no demand had existed.

The fact that many of these associations have been operating for a decade or longer and are increasing their expenditures indicates that group promotion pays dividends. Apparently the associations in the metal field now adopting this weapon of trade extension have much to gain by it. Certainly the manufacturers of iron, steel and nonferrous products cannot much longer neglect their markets if they want to retain their share of business in competition with producers of other materials who already employ group action. Under present conditions there are few commodities that may be considered absolute necessities. In most cases the buyer has the option of specifying one of two or more materials. Whether the builder uses concrete or steel; wood lath, metal lath or wall board; gumwood or sheet metal for interior trim; copper, galvanized steel, tile or prepared roofing; oak or maple flooring; cast iron or steel pipe; copper, tin or galvanized weather strips; and copper, bronze or galvanized screens is largely a question how much he knows about the advantages of each of these competitive materials. The manufacturer working alone cannot hope to create a consciousness for his product, but by pooling his resources with others in his field he can broaden his market and maintain his position.

SALES promotion is only one of many functions in which trade associations are effective. Frequently changing habits of the public, new methods of manufacture, or other altered conditions react to the detriment of long established institutions. For instance, at one time a noticeable hostility to coffee developed, a situation which manufacturers of coffee substitutes were quick to capitalize. The National Coffee Roasters association undertook a campaign in the interest of all brands of coffee, which has eliminated to a large extent much unfounded criticism of that beverage.

Similar situations often arise in the metal industry. Today the enthusiam of many advocates of welding has reached the point where they make many unwarranted predictions as to the early extinction of riveting and castings. An association of manufacturers of electrical equipment has adopted the slogan "Do it electrically" and is advocating the use of electricity for every conceivable mechanical and thermal operation. Gas manufacturers are advertising "You can do it better with gas."

The upshot of this mania for propaganda is that manufacturers whose processes, products or equipment are attacked, find themselves in unfortunate positions. Sometimes it is necessary to gradually shift production from a fading commodity to one that supersedes it, as for instance the transfer by the Studebaker Corp. of its activities from carriages and wagons to automobiles. In the majority of cases, however, the problem can be met by starting a counter-attack. For example, the effective work of the American Gas association is largely a counter barrage against the assaults of other fuels and substitutes for fuels. Makers of rivets and riveting equipment have it in their power to offset much of the menace of welding by starting intelligent propaganda on the good features of riveting, which are abundant. In the long run all meritorious methods, products and equipment seek their own levels. The need for each of them eventually will assert itself, but in the meantime well directed promotion work most easily accomplished through group action will go a long way in shunting aside momentary dislocations of demand, induced by excessive enthusiasm for new processes.

COMPILING of statistics, which takes first rank in importance in the problem of improving methods of distribution, is another function in which trade associations excel. The decisions of the Supreme Court on the maple flooring and cement cases make it clear that statistical surveys are economic necessities and that gathering statistics is not an infringement.

Propaganda for welding emanates from individual concerns rather than from a trade association, yet it is effectively spreading the gospel of welding far and wide

Unfortunately there still are a few manufacturers so tied down to tradition that they continue to withhold figures on production, stocks and sales, and thus weaken the value of data supplied by the more enlightened companies in their field. This attitude is passing, however, and if the progress made recently continues, it will not be long before the chain of production and distribution statistics is complete. The growth of the group plan of action again is the most encouraging feature in this development.

The association idea also is of value in standardization work. Now that most of the important producing

The association idea has been adopted widely by manufacturers of building materials. In practically every industry represented above, consumption increased soon after the association's work got under way

groups may be approached through their respective trade associations, the efforts of standardization agencies are simplified. The part played by these associations is indicated by the fact that 250 organizations are participating in developing the 218 standardization projects now before the American Engineering Standards committee.

In summarizing the developments in industrial standardization during 1925, C. E. Skinner, chairman of the committee, points to a significant movement. He states:

"The closing year has shown important developments in industrial standardization. One of the most important of these has been the increase of active interest on the part of industrial executives. A conference of first-line executives, held early in the year, organized a committee from their number to serve as an advisory committee to the American Engineering Standards committee, and these men are now giving time and assistance to the solving of national standardization problems. Formerly, the matter of standardization has been left largely to the technical man, but it is now generally recognized that standardization is a managerial problem of the first rank."

Distribution Standards Next

He concludes with the suggestion that one of the problems of 1926 is to encourage distributors to play their proper roles in the standardization movement. This is essential, inasmuch as standardization is rated by many authorities as second only to statistics in its importance to the distribution problem. Since the collection of business data and development of standards both depend so heavily upon group action, it is apparent that progress in solving the ristribution problem rests largely on the success of distributors in forming associations to represent their various divisions.

Simplification work is progressing rapidly. In 1925, the fourth year of the division of simplified practice of the department of commerce, 39 simplifications were carried to completion, 10 are in the final stages and about 60 others are under survey. Here again trade associations perform valuable service. About 200 industrial groups now are co-operating with the department of commerce on simplification programs.

This work involves many difficulties and requires tact, patience and perseverence on the part of all who are engaged in it. The success of simplification thus far speaks volumes for the ability of producers, manufacturers and consumers to harmonize their differences and work for the good of all rather than entirely for self.

Drops 73 Per Cent of Varieties

SINCE the department of simplified practice was inaugurated, simplification programs have been put into effect on more than 50 commodities resulting in an average reduction in varieties of 73 per cent. The results on products in the iron, steel and metal field from January, 1921 to October, 1925, are as follows:

Commodities	Per cent reduction
Metal lath	81
Files and rasps	63
Woven wire fencing	86
Woven wire fence packages	94
Range boilers	90
Hot water storage tanks	88
Steel barrels and drums	64
Forged tools	47
Plow bolts	44
Steel reinforcing bars	73
Sheet steel	86
Eaves trough and conductor pipe	24
Terneplate	22
Steel lockers	74
Milling cutters	35
Tacks and nails, sizes	58
Tacks and nails, packing weights	71
Shovels, spades, and scoops	92
Hospital beds:	
Lengths	97
Widths	97
Heights	98
Beds, metal	97
Bed springs	97

CREDIT for helping to direct attention to the distribution problem is due the chamber of commerce of the United States. Two national distribution conferences, previously mentioned in this article, were held during 1925. The first, convening in January, resulted in the appointment of six committees composed of leading manufacturers, distributors and dealers from all lines of business. The reports of these six bodies were presented to the second conference, held in December, and constitute the most elaborate mass of data yet assembled on the subject.

Surveys Source of Statistics

Committee I, under the leadership of Owen D. Young, chairman of the board, General Electric Co., submitted a report containing a preliminary survey of the existing sources of distribution statistics. Committee II, headed by A. Lincoln Filene, general manager, William Filene's Sons Co., Boston, presented a comprehensive study of trade relations, dwelling particularly on trade abuses and the efficacy of codes of ethics.

In its report on market analyses, committee III, with Stanley Resor, president, J. Walter Thompson Co., New York, as chairman, presented the results of an investigation on the effect of advertising on the cost of distribution. Four outstanding achievements of advertising are cited as follows:

1. Decreasing the cost of selling.
2. Lowering the cost of production

(*Concluded on Page* 123)

How Main Groups Took Steel, 1922-25

	1925		1924		1923		1922	
	Tonnage	Per cent of Total	Tonnage	Per cent of Total	Tonnage	Per cent of Total	Tonnage	Per cent of Total
Railroads	5,986,569	22.74	5,924,601	27.54	7,173,868	31.02	4,035,386	24.96
Building*	4,106,205	15.32	3,106,601	14.44	3,128,992	13.53	1,913,583	11.83
Oil, gas and water	2,160,667	7.86	1,816,729	8.43	2,451,783	10.60	2,398,910	14.84
Automotive	3,905,683	14.58	2,445,063	11.37	2,449,245	10.59	1,451,632	8.98
Exports	1,204,274	4.49	1,267,201	5.89	1,438,647	6.22	1,226,342	7.83
All others	9,439,218	35.01	6,954,837	32.33	6,485,541	28.04	5,102,696	31.56
Grand total	26,802,616	100.00	21,515,032	100.00	23,128,076	100.00	16,168,549	100.00

1925 based on returns from 83.76 per cent of total capacity.
1924 based on returns from 81.90 per cent of total capacity.
1923 based on returns from 75.84 per cent of total capacity.
1922 based on returns from 70.88 per cent of total capacity.

*Exclusive of railroad bridges and buildings.

Automotive Needs Mark Steel Demand in 1925

STEEL requirements far surpassing anything previously known, of the automotive industry contributed more than any single element to the building up of the great market of 1925. Railroad buying failed to sustain its traditional leadership in determining the breadth of the market and was the smallest relatively in four years. In tonnage it was even below 1923 when the volume of all demands for steel was somewhat less. Building construction just about held its accustomed place as a major market factor. Oil, water and gas activities were below normal. Miscellaneous needs of steel were considerably higher.

These various aspects of the year's business in steel are brought forth by IRON TRADE REVIEW'S fifth annual analysis of shipments and consumption in accordance with classified groups. Returns received from producers representing 83.76 per cent of the steel ingot capacity of the United States show a total of 26,802,616 tons of finished material so divided as to ultimate purpose. This indicates a gross production of finished steel in the country in 1925 of approximately 33,000,000 tons, the greatest ever recorded.

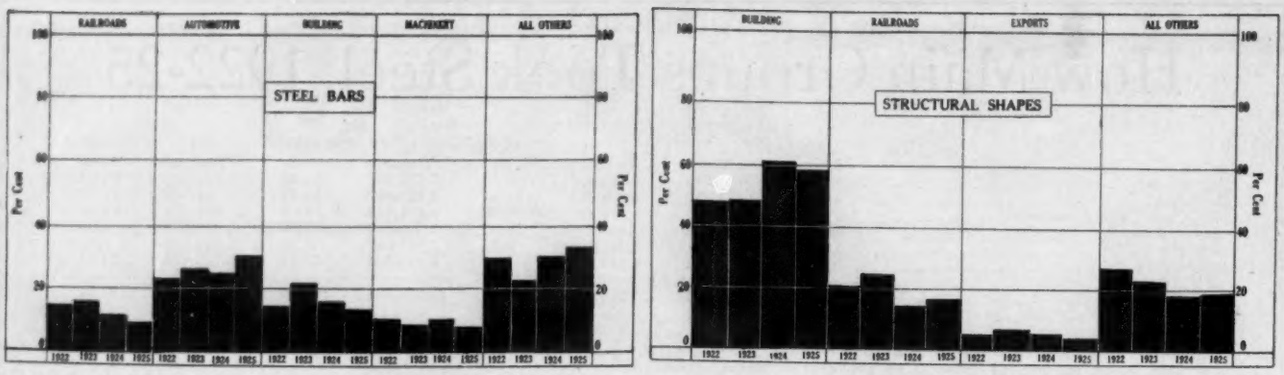
IN A BROAD sense, 1925 may be considered an automotive year in steel. Not only were the gross needs of the automotive industry by far the largest in the history of that branch of manufacture but, what is more significant, they showed a faster rate of expansion than other consuming groups. This points to the growing way in which automotive transportation is drawing upon ramified manufacturing capacity for production and maintenance. In 1925, the automotive field comprising the production of automobiles, trucks, tractors and affiliated activities absorbed 14.58 per cent of the total output of the finishing mills. This is well ahead of the previous year when 11.37 per cent of the tonnage was taken and by a greater margin, exceeds the average of the years of 1924, 1923 and 1922 which is as far back as the definite figures of steel distribution extend. The average for these years was 10.31 per cent. The fact that the automotive portion of the total amount of steel consumed has gone steadily upward in the past four years is worthy of special notice. The percentage figures by years have been 1922, 8.98; 1923, 10.59; 1924, 11.37; 1925, 14.58.

Expressed in volume, the automotive group in 1925 required approximately 4,675,000 tons of steel. This is based upon the classification of shipments by the reporting producers. These mills showed a total of 3,905,683 tons of material delivered to this class of buyers. In 1923, the estimated total consumption of the automotive industry was about 2,985,000 tons; in 1923, about 3,200,000 tons; and in 1922 about 2,050,000 tons.

Railroad buying in 1925 of steel, as generally appreciated, was not up to the so-called normal proportions. Just how far it fell away from the volume of the past four years, it has required the definite statistics of shipments to show. Last year the railroads provided the needs for 22.74

Fifth Annual Analysis Shows Steel's Use

IRON TRADE REVIEW herewith presents for 1925 *its fifth annual analysis of finished steel among leading consuming groups. This yearly determination of the final use and purposes to which tonnage is being put, originated and exclusively organized by this publication in* 1921 *has gone forward since winning constantly greater appreciation of its commercial value from both buyers and sellers of steel. Each year a greater number of producers classify and report their shipments in accordance with the divisions worked out by* IRON TRADE REVIEW. *This year almost* 84 *per cent of the country's steel ingot capacity is represented.*



COMPARATIVE PERCENTAGES OF STEEL BAR AND STRUCTURAL SHAPE OUTPUTS ABSORBED BY LEADING CONSUMING INDUSTRIES 1922-1925

cent of the total demand for steel. This is the smallest fraction of the whole for any of the past four years for which accurate data are available. In 1924 the percentage was 27.54; in 1923, the biggest steel year in finished products up to that time, it was 31.02; in 1922, it was 24.96.

The total tonnage of steel absorbed last year by the railroads, directly or indirectly, was approximately 7,150,000 tons. This is gaged from the fact that the producers operating 83.76 per cent of the country's steel ingot capacity classified 5,986,569 tons of their shipments as called for by railroad purposes. In 1924, 81.90 per cent of capacity furnished to the railroads 5,924,601 tons, which would mean 7,235,000 tons. In 1923 the indicated total shipments to the railroads was 9,450,000 tons and in 1922, 5,690,000 tons.

Of the railroad tonnage reported for 1925, 2,999,481 tons went into track work, 2,284,792 tons into cars and locomotives, 524,875 tons into railroad buildings and bridges and 177,421 tons is credited to street railways. Compared with 1924 it is shown that track work increased materially but this was more than offset by the falling off of tonnage for cars, locomotives, buildings and bridges.

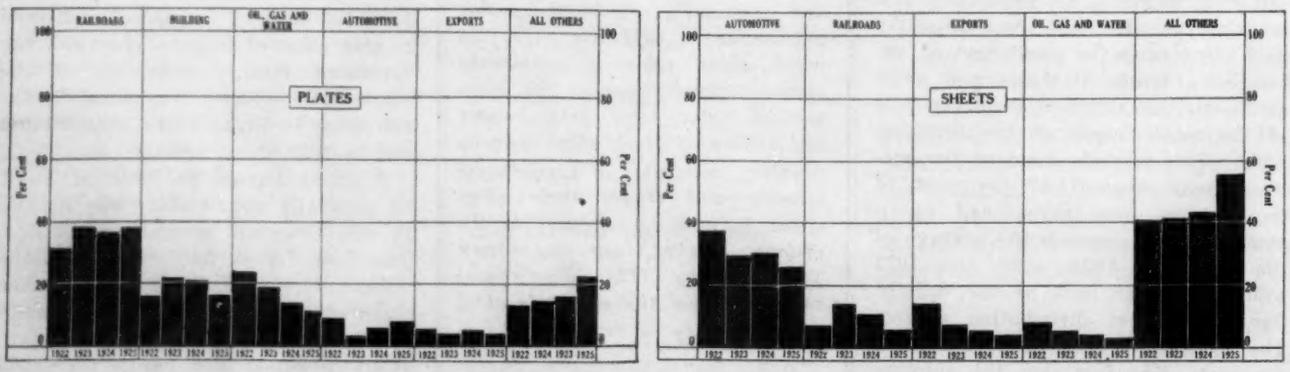
Building work exclusive of that for railroad bridges and buildings which is classified separately footed up a total of 4,106,205 as segregated by the reporting mills or 15.32 per cent of the total shipments. This indicates that about 4,900,000 tons went into general building construction in 1925. With railroad buildings and bridges added, this would mean a grand total of over 5,500,000 tons. In 1924 the capacity reporting 81.90 per cent gave a gross of 3,106,601 tons or 14.44 per cent of all. This resulted in a calculated total of 3,790,000 tons and a grand total of over 4,600,000 tons with railroad buildings and bridges included. The comparison with 1923 shows 13.53 per cent of all, a reported total of 3,128,992 tons, a calculated total of 4,125,000 tons and a grand total of about 4,900,000 tons when railroad buildings and bridges are added. In 1922 the reported tonnage was 1,913,583 tons or 11.83 per cent of all shipments.

Oil, water and gas requirements carried along the continuous decline which had marked the record of these activities for the past four years. The reported tonnage in 1925 was 2,160,667 tons or 7.86 per cent of all shipments. In 1924 it was 8.43 per cent, in 1923, 10.60 per cent and in 1922, 14.84 per cent. Carried out to a calculated total, the shipments for this group of all mill capacity was about 2,580,000 tons compared with 2,200,000 tons in 1924, 3,200,000 tons in 1923 and 3,385,000 tons in 1922.

Improvement of conditions in farming pursuits is indicated by the increased tonnage of steel which went to the division of agricultural equipment in 1925. The mills returned a total of 810,243 tons as supplied for this use or 3.02 per cent of all tonnage delivered. Computed for all mill capacity this is equivalent to about 965,000 tons. In 1924 shipments of 731,744 tons were reported by the capacity canvassed or 3.54 per cent of the total. This meant indicated total needs by the agricultural industry from all capacity of about 895,000 tons. The recent recovery in agricultural demand is to be seen from the fact that in 1923, only fractionally less than 1925 as a big steel year, the tonnage of this description was about 715,000 tons or 250,000 tons less than in the year just passed. As always, the principal finished form of steel required by this group is wire products. Last year it took 18.01 per cent of the output of the wire mills compared with 15.13 per cent in 1924.

Mining and lumbering continues one of the smallest lines of steel consumption. Their requirements in 1925 as classified by the mills were 202,341 tons or 0.75 per cent which elaborated into a full total for all capacity would be 240,000 tons. This stands against 0.93 per cent of the total and a gross need of 245,000 tons in 1924.

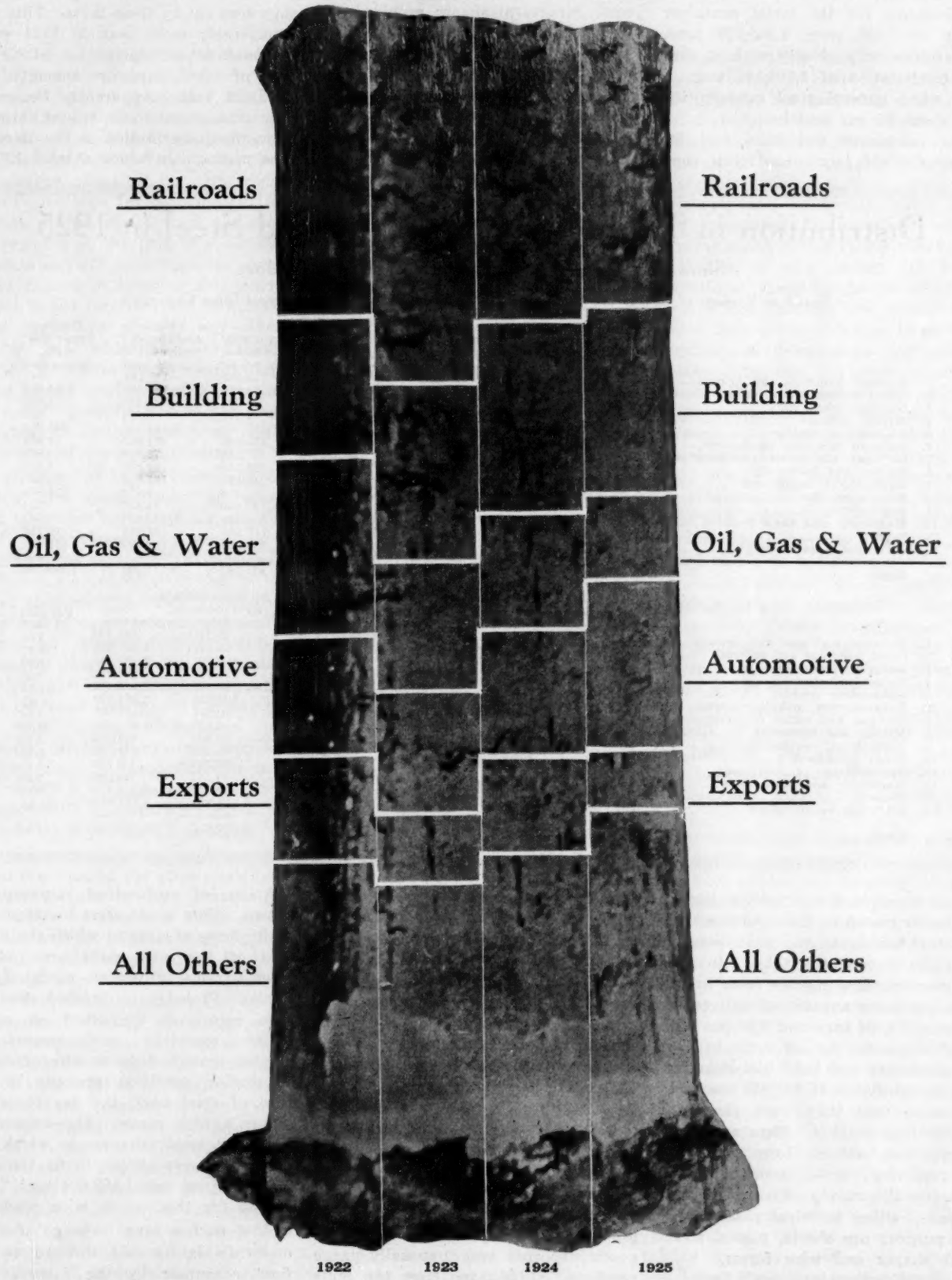
Constancy of the year-to-year re-



COMPARATIVE PERCENTAGES OF PLATE AND SHEET OUTPUTS ABSORBED BY LEADING CONSUMING INDUSTRIES 1922-1925

Ingot Illustrates Proportionate Division of Steel Output Among Principal Consuming Groups

1925, 1924, 1923 and 1922 Compared



quirements of steel for the manufacture of metal containers is illustrated by the figures of shipments. For this purpose in 1925 the reporting mills sent forward a total of 1,130,109 tons or 4.21 per cent of the total. Calculated on the basis of total mill capacity, it is indicated that all requirements for the metal container group in 1925 were 1,349,223 tons. This tallies very closely with a similar computation of 1,303,541 tons in 1924 when general steel consumption was about 20 per cent less.

The machinery and hand tool industry did not require as much steel ported in 1925 representing only 0.61 per cent and the tonnage 163,569. On a practically similar return in 1924, the percentage was 0.80 and the weight 1,170,973 tons. As expected, the principal item in shipbuilding construction is plates, these accounting for 70,701 tons the past year. Structural shapes provided 40,650 tons and steel bars, 14,940 tons.

Foreign shipments in the year either in percentage or gross total did not reach the basis of 1924 but the variations were slight. The reporting mills showed a total of 1,204,274 tons dispatched to foreign destinations. sheets totaled 178,076 tons, tin plate 170,067 tons, rails 137,109 tons, bars 123,188 tons, plates 114,464 tons and structural shapes 119,964 tons.

Producers in dividing up their shipments for the year were unable to classify a total of 6,411,067 tons. This represents 23.92 per cent of the tonnage sent out by these mills. This was considerably more than in 1924 when the unallocated tonnage for 81.90 per cent of total capacity amounted to 4,015,492 tons. Apparently the most difficult material to be traced through to its final destination is the item of wire products in which a total 1,073,-

Distribution in Tons of Output of Finished Steel in 1925

Shown by Consuming Groups and Individual Product

Based on Reports of Companies Controlling 83.76 Per Cent of Country's Steel Ingot Capacity

	Heavy rails, gross tons	Light rails, gross tons	Angle bars, steel ties and other track accessories, gross tons	Plates, gross tons	Structural shapes, gross ton	Bars and shapes under 3-inch gross tons	Hoops, bands and strip, gross tons
1. Railroad buildings and bridges	1,062	366	3,888	160,523	156,408	137,181	387
2. Other buildings and bridges	1,991	353	55	453,124	1,730,288	725,431	46,514
3. Railroad track work	2,314,294	35,157	598,936	5,224	268	26,237	1,039
4. Street railways	93,402	.....	17,693	3,274	4,707	9,961	146
5. Automotive vehicles	61	1,906	251	180,821	23,142	1,467,132	346,279
6. Railroad cars and locomotives	29	16	51,865	876,512	376,566	394,562	14,973
7. Oil, gas and water requirements	899	6,875	78	380,527	77,296	72,540	12,853
8. Mining and lumbering	12,456	68,243	12,612	40,847	13,531	20,886	3,613
9. Agricultural equipment	769	51	196	42,615	12,928	185,845	52,058
10. Metal containers	.....	.....	.....	5,455	248	5,770	138,869
11. Shipbuilding	.....	.....	32	70,701	40,650	14,940	211
12. Machinery and hand tools	2,331	989	309	58,063	48,836	443,867	25,744
13. Exports	137,109	10,125	18,499	114,464	111,964	123,188	15,223
14. All other requirements	27,537	7,737	100,671	362,204	334,955	1,183,694	532,887
Totals	2,591,940	131,850	805,053	2,754,354	2,931,787	4,811,234	1,190,796

	Black plates for tinning, gross tons	All other black plate and sheets, gross tons	Tubing and pipe, gross tons	Wire products, gross tons	All other finished steel products, gross tons	Totals, gross tons	Per cent of total
1. Railroad buildings and bridges	.....	28,781	103	7,040	29,136	524,875	1.95
2. Other buildings and bridges	68	378,757	438,066	262,176	69,382	4,106,205	15.32
3. Railroad track work	.....	.....	108	10,717	7,501	2,999,481	11.19
4. Street railways	.....	.....	1,911	4,391	41,936	177,421	0.66
5. Automotive vehicles	.....	934,441	61,518	133,289	756,843	3,905,683	14.55
6. Railroad cars and locomotives	.....	191,122	41,392	37,019	300,736	2,284,792	8.52
7. Oil, gas and water requirements	22,440	116,397	1,403,316	20,919	46,527	2,160,667	7.86
8. Mining and lumbering	.....	3,688	2,056	19,397	5,012	202,341	0.75
9. Agricultural equipment	.....	67,045	10,951	382,278	55,507	810,243	3.02
10. Metal containers	699,969	188,233	3,059	27,253	61,253	1,130,109	4.21
11. Shipbuilding	.....	2,553	3,032	3,503	27,947	163,569	0.61
12. Machinery and hand tools	698	60,970	1,539	36,958	41,585	721,889	2.69
13. Exports	170,067	178,076	181,905	104,277	39,377	1,204,274	4.49
14. All other requirements	356,712	1,250,123	627,449	1,073,165	553,933	6,411,067	23 92
Totals	1,249,954	3,400,186	2,776,405	2,122,382	2,036,675	26,802,616	100.0

last year as in the preceding period. Producers traced to this source a total of 721,889 tons in the past year or 2.69 per cent of the total. In 1924 the corresponding figures from practically the same amount of mill capacity was 768,754 tons and 3.57 per cent. Total shipments by all mills in 1925 for machinery and hand tool manufacture is calculated at 861,855 tons. In the same way they were placed at 938,650 tons in 1924. Bars and small shapes with 443,867 tons shown by the reporting mills overwhelmingly make up the supply of steel for this purpose. Other principal products for this purpose are sheets, plates, structural shapes and wire forms.

Shipbuilding remains a small factor in steel consumption, the shipments re- This represented 4.49 per cent of the total shipments. In 1924 on reports accounting for 81.90 per cent of total ingot capacity, the figures were 1,267,201 tons gross and 5.89 in percentage. Calculating all export shipments upon the basis of the ingot capacity reported, it is indicated that the gross total for the past year was 1,474,045 tons. By a similar calculation the total in 1924 was 1,549,692 tons.

The principal materials exported in the order of importance were tubular products, sheets, tin plate, rails, bars, plates, structural shapes and wire products. The quantity of tubular goods exported was unusually large reaching 181,905 tons from the mills of the reporting companies. Similarly, 165 tons of unclassified shipments is shown. This would seem to reflect the multiplicity of uses to which the products of the wire mills are put to meet various utilitarian needs of the public. Probably no finished steel article enjoys so diversified an application especially with respect to further manufacture as wire products. A similar condition prevails in the case of steel bars, the use of which covers a wide range. The amount of bars and small shapes on which the producers were unable to fix the ultimate purpose was 1,183,694 tons. One reason for this, as in wire products, is that such a large tonnage of these materials is handled through to the final consumer by the jobbers and not by the mills direct.

Alloy Steels Gain Recognition

Production, Exclusive of Sheets, Exceeds 1,000,000 Tons Annually—Automotive and Machine Tool Industries Absorb 85 Per Cent of the National Output—Ohio, Pennsylvania and Michigan Are Largest Consuming States

By John D. Knox

TWO decades ago the alloy steel industry was in its infancy; today over 70 companies are engaged either in the manufacture of this grade of steel or in processing it from the semifinished form to the various shapes required by the trade. Scientific methods for determining the physical properties of steel together with research on the part of engineers and metallurgists have been the dominating factors in bringing this grade of steel to the forefront. It is a matter of conjecture whether any other industry has undertaken as many scientific investigations to improve the quality of the product and to enlarge its commercial application as has been conducted by those associated with this branch of the steel industry.

To problems of transportation is attributed the development of alloy steels. At the outset of automobile manufacture, pleasure cars were rather cumbersome by reason of the fact that a sufficient amount of steel had to be used so that vehicles would stand the shocks and stresses encountered while in operation. As manufacturers strove to improve their product, their aim was along the lines of lighter weight and at the same time greater strength. Steel with small percentages of chromium, tungsten, vanadium, etc. at once lent itself to these demands because of added strength, hardness, etc. and automobile builders were quick to recognize its important advantages.

As the output of automobiles increased the demand for alloy steels became greater and by 1912 practically every maker of cars was using alloy steel for one part or another.

New demands were created by the late world war. Gun shields, bullet proof tanks, airplane motors etc. were made largely of alloy steel and rendered invaluable service. Other demands that have made the development of alloy steel of a transportation character have come from the railroads. By reason of the fact that alloy steel is capable of withstanding enormous shocks and stresses to which rolling stock is subjected in starting and stopping, engineers associated with this industry were not long in employing this grade of steel in the construction of locomotives and cars for such parts as crank pins, axles, springs, driving rods, etc. Through the use of alloy steel railway engineers were able to reduce the weight of the equipment and at the same time to increase the carrying capacity and to reduce, if not eliminate, the number of breakdowns to which their equipment is subjected under heavy traffic conditions. Moreover they found by the use of alloy steel springs road shocks were better cushioned.

High Lights of Alloy Steel Industry

	Per cent
Manufactured by:	
Open-hearth process	88.5
Electric process	8.0
Bessemer process	3.0
Crucible process	0.4
Output into ingots	95.7
Output into castings	4.3
Semifinished alloy steel output:	
Processed by producers	90.0
Purchased by finishing mills	10.0
National output processed into:	
Hot rolled bars	82.0
Cold drawn bars	9.0
Strip steel	7.0
Tubes	1.0
Plates	0.3
Wire	0.2
Shapes	0.2
Miscellaneous	0.3
Consumed by:	
Automotive industry	56.0
Machine tool industry	29.0
Railroad industry	5.0
Agricultural industry	2.0
Construction industry	0.06
Shipping industry	0.02
Export trade	2.0
Miscellaneous	6.0
Largest producing state	Ohio

Perhaps in no other branch of industry has progress been so remarkable as in the machine tool industry. Machine tool efficiency has been increased as a result of high-speed cutting tools made possible by the use of alloy steel. The ability of alloy steel cutting tools to take deep cuts brought about a change of machine tool design within recent years which has effected economy national in scope. A large percentage of alloy steel used by the machine tool industry is purchased in the finished form, that is, the producer makes the steel to conform to certain chemical analyses, subjects it to heat treatment to impart certain physical qualifications and finishes the material either by cold drawing, turning or polishing.

The successful adaptation to which alloy steels have been put by manufacurers of machine tools, railroad equipment and automobile parts has been recognized by industries other than these and within recent years the application of this product has been increasing. Many producers of alloy steels whose opinions are highly regarded believe this industry is on the threshold of tremendous expansion. Whether this was the predominating thought that influenced officials of the Steel corporation to sanction the construction of a new plant in the Chicago district for the sole production of alloy steel, is purely conjectural. Nevertheless the project is taking shape and marks the entrance of this company into the manufacture of special steels on a large scale.

Chrome-vanadium steels probably claim the largest consumption of the various alloy grades manufactured in this country. The annual output of chrome-vanadium steel rolled by various makers in this country during 1925 was approximately 250,000 tons. While the bulk of the output of this grade was used by the automotive industries, attractive tonnages went into forgings and shafts for marine engines.

The consumption of chromium steels during 1925 is estimated to be about 7000 tons. Since the majority of alloy steels is sold on the pound basis the volume of this tonnage can best be apprehended by stating the annual output as approximately 15,680,000 pounds. For many years this grade has been employed in the manufacture of stamp shoes and dies for pulverizing gold although it also finds wide application in the manufacture of files and ball and roller bearings.

During the war nickel steel was used in large tonnages for the manufacture of gun forgings but under peacetime conditions a large portion of the annual output is used for machine parts, bridges and automobile parts and bicycle tubing. Similarly steels containing the combination of chrome and nickel find large uses in the manufacture of projectiles. This grade also

is heavily consumed by the automotive industry in large tonnages and it is estimated that in 1925 approximately 150,000 tons found its way into this particular industry.

Another important alloy steel which has wide application is the silicomanganese grade. Its uses are found in leaf springs for automobiles and cores of static transformers. Last year it is estimated that 50,000 tons was used solely for silicon transformer metal. High-speed steel containing tungsten, chromium, vanadium and cobalt also was in heavy demand during 1925 a large tonnage having been fabricated into lathe and planer tools, and exhaust valves for automobiles. Approximately 7000 tons of tungsten steel was manufactured during 1925 and fabricated into such commodities as permanent magnets for electric meters and small dynamos.

Manganese steel is another grade of the alloy family for which there is a growing use. Large tonnages are rolled into plates and in this form is used for chute linings, shovels, hoes etc. Because of the resistance of this grade of steel to cutting and to heavy charges of explosives large tonnages in the plate form are used for bank vaults, burglar proof safes and general jail work. Its nonmagnetic property has brought it into important usage in the construction of electric magnets used extensively at skull crackers, at scrap yards, foundries, etc. for lifting metal. Because of its property of supporting heavy loads attractive tonnages also are devoted to spring hangers on locomotives. Screens woven of manganese steel wire for screening crushed stone are employed to withstand the severe abrasive action. Similarly manganese steel rods woven into screens are used extensively for separating the breeze from coke. The railroads are large consumers of manganese steel for frogs, switches and curved rails.

Not more than 1 or 2 per cent of the alloy steel manufactured in this country is used for construction purposes. The small amount used for structural shapes probably is due to the lack of heat treating and quenching equipment at the mills and among fabricating shops for without this treatment the steel will not possess the desired physical properties. Therefore, until facilities are provided by manufacturers to carry out this treatment, the tonnage of alloy steel for such structural shapes as beams, channels, bridge members etc. will be small.

While the agricultural implement industry still is a virgin field it undoubtedly offers a wide market for alloy steels. Plow beams is one of the possible applications; tractors is another.

Alloy steel also has come into recognition as an extremely suitable material for shovels. In many cases where manufacturers have authorized the use of alloy steel shovels in handling such material as gravel, the various materials used for charging open-hearth furnaces, and for the gritty material handled on foundry floors shoveling costs have been reduced from 15 to 20 per cent.

Perhaps one of the most recent industries to recognize the advantages of alloy steel has been the oil producing industry. Large tonnages of this grade of steel now are being purchased by this class of consumers for tools used in rotary drilling of wells. By adapting alloy steel to this type of tools, operators have reduced breakage to a minimum, lengthened the life of the tool and eliminated much of the work required in redressing. Other growing uses of alloy steel include chains, track tools, track bolts, hatchets axes, pneumatic tools, saws, etc. It is estimated that 30,000 tons of alloy steel is used annually for the manufacture of circular and band saws.

Alloy Steel Output in 1925 by Form

	Gross tons
Ingots produced	1,085,607
Billets	74,638
Slabs	4,622
Sheet bars	1,642
Bars, hot rolled	740,359
Bars, cold drawn	64,599
Plates	375
Tubes	7,026
Wire	155
Shapes	2,222
Strip steel	40,100
Forgings	2,150
Locomotive tires	375

Those figures of ingots or finished tonnage disregard sheets of which it is estimated about 1,000,000 tons additional of alloy bearing metal is produced for rust resisting and protective purposes.

Though about 66 establishments are engaged in the manufacture, rolling, drawing or hammering of alloy steel the largest portion of the annual output is contributed by approximately a half a dozen companies. The product is made either by the bessemer, open-hearth, crucible or the electric furnace process. Approximately 88.5 per cent of the national output of alloy steel is made in open-hearth furnaces. In the early days of alloy steel production crucible furnaces furnished perhaps the largest portion of the annual production. According to most recent compilations 8 per cent of the alloy steel produced in this country is made in electric furnaces and 0.4 per cent by the crucible process. While the bessemer process has not gained much favor among alloy steel manufacturers in this country recent statistics show that 3 per cent of the national output is converted by this method.

During 1924 the mills in this country produced 202,409 tons of alloy steel, of which 95.7 per cent was made into ingots and 4.3 per cent into castings. Of the total tonnage of ingots manufactured, it is estimated that 1,000,000 tons went into the manufacture of copper bearing sheets for rust resisting and protective purposes.

Plants which produce, roll, hammer or cold drawn alloy steel in this country total 78. Pennsylvania has 35 such concerns, or 45 per cent of the total. New York is second in the list with 14 plants or 18 per cent of the total. Ohio comes third in the list with nine plants or 11½ per cent of the total. Other states which have alloy steelmaking plants within their borders include Illinois with five, New Jersey with four, Connecticut with three, Maryland with two and Kentucky, Michigan, West Virginia, Rhode Island, Indiana and Massachusetts with one each. Despite the fact that Ohio has fewer plants than either Pennsylvania or New York its production of alloy steel exceeds the output of either of these two states.

Approximately 270 different brands of commercial alloy steels are marketed by American producers. Foreign producers are responsible for at least 46 different brands now found on the market in this country. Of the companies identified with the alloy steel industry in this country at present over 48 are engaged in manufacturing and finishing the product while about 14 are engaged in finishing it only.

Another interesting deduction made from figures supplied by the majority of alloy steel producers, is that of the total tonnage of alloy steel ingots manufactured last year 10 per cent was sold in billets, slab and sheet bar form for conversion into finished shapes to concerns depending on outside mills for their supply of steel in the semifinished state. In other words 90 per cent of all alloy steel ingots manufactured in this country during 1925, disregarding the scrap loss, was processed by producers into the finished form either by rolling, hammering or drawing.

The principal forms into which semifinished commodities of the alloy grade were converted last year include hot rolled bars, cold drawn bars, tubes, plates, wire, shapes, strip steel and miscellaneous products such as forgings, locomotive tires, etc. Interest is

attracted to these individual outputs in view of the fact that 82 per cent of the production was in the form of hot rolled bars. This output is remarkable in that the product which occupies the second position from the standpoint of tonnage, namely cold drawn bars, required only 9 per cent of the ingot output for 1925. New England, it is estimated, uses from 25,000 to 30,000 tons of alloy bars annually. The next closest rival is hot and cold rolled strip steel which claimed 7 per cent of last year's output of ingots. Of the remaining portion of alloy steel ingots produced in 1921, one per cent was used in tube manufacture, 0.3 per cent for miscellaneous products such as forgings, locomotive tires, etc., 0.3 per cent for plates and 0.2 per cent each for wire and small shapes.

Over half of the total output of alloy steel made in 1925 was consumed by the automotive industry. From figures obtained from the leading manufacturers of alloy steel in this country the quantity used by this class of consumers was equivalent to 56 per cent of the national output. Automobiles of small wheel base manufactured in this country require from 230 to 300 pounds of alloy steel in their construction; in the larger machines, however, from 300 to 375 pounds of alloy steel is used for such parts as the steering pins and knuckles, springs, transmission and differential gears and shafts, rear axle drive shaft, connecting rods and bolts, roller bearings, chain drives, crankshaft, front and rear axles, etc.

The amount of alloy steel consumed in trucks however is much larger than for pleasure vehicles. For instance, the alloy steel springs of some of the larger trucks weigh as much as 300 pounds and in addition there is the I-beam front axle and the crankshaft. If the quantity of alloy steel going into the average automobile and truck is taken as 350 pounds then in last year's production of 4,250,000 cars and trucks approximately 660,-

Partial List of Alloy Steel Applications

Adzs
Agricultural implements
Anvil cutters
Anvil facings
Arbors
Augers
Auto drive shafts
Axes

Ball connections
Ball joints
Ball peen hammers
Battering tools
Beading tools
Becket hooks
Bevel axes
Bit axes
Blacksmiths' cold cutters
Blacksmiths' flatters
Blacksmiths' swedges
Blanking dies
Block punches
Bolt cutter arms
Bolt cutter cams
Bolt machine dies
Bottom blanking dies
Brass finishing tools
Breaker arms
Breaker cams
Breast plates
Bridge reamers
Broaching tools
Broad axes
Brush hammers
Bucket teeth
Burnishing tools
Butt hooks

Cabinet files
Calking tools
Cams
Cant dogs
Cant hooks
Cant saw files
Cartridge shell dies
Carver knives
Chain feed sprockets
Channeling machine bits
Chipping chisels
Chisel steel
Choker hooks
Chuck jaws
Chuck liners
Chuck wrenches
Circular saws
Clay chisels
Clock springs
Coil springs
Cold chisels
Cold cutters
Cold header work
Cold heading dies
Cold nut punches
Cold punches
Cold rivet dies
Cold rivet sets
Cold rivet snaps
Cold trimming dies
Collets
Cones
Copper finishing tools
Counter sinks
Cross cut files
Crow bars
Cutlery
Cutters

Dental instruments
Die casting dies
Die plates
Dies
Digging bars
Doctors' instruments
Dogs
Dog hooks
Drawing dies
Drawing drills
Dredge bucket teeth
Drift pins
Drills
Drill rods
Drop hammer dies

Embossing dies
Expander rolls
Eye pins

File blank punches
File cutting chisels
Fine ball bearings
Fire arm parts
Flat drills
Flatters
Flue cutters
Flue expanders
Flue rollers
Forging dies
Fork forming dies
Forming dies
Forming tools
Four point tools
Friction feed disks
Fullers

Gears
Glass cutters
Glove dies
Grabs
Granite chisels
Granite points
Grinding machine spindles
Gripper dies

Hack saws
Hand chisels
Hammers
Hand stamps
Hatchets
Heading dies
Hoes
Hot chisels
Hot punches
Hot rivet sets
Hot shearing
Hot straighteners

Ice plows

Jack screws
Jewelers' dies
Jig steel

Keys
Knife blades
Knurls

Lathe centers
Lathe spindles
Lawn mowers
Lead screws

Machine knives
Magnets
Mandrels
Matches
Mattocks
Mauls
Metal turning tools
Milling cutters
Milling machine arbors
Milling saws
Mill picks
Mine drill steel
Mining machinery.

Nail dies
Nail pullers
Nail sets

Oil well casing grips

Paper knives
Paving drills
Peavies
Picks
Pick points
Pillow files
Pinch bars
Pinions
Pitch forks
Pipe cutters
Pipe dies
Pipe jaws
Piston rods
Pitman rods
Planer tools
Pliers
Plug drills
Plug gages
Plunger molds
Pneumatic hammer barrels
Pneumatic hammer dies.
Pneumatic hammer pistons
Positive clutches
Precision gages
Printing machine dies
Pruning shears
Punches
Punching dies
Putty knives

Quarry drills

Railroad track tools
Ratchet feed gears
Ratchet latches
Razors
Reamers
Rivet machine dies
Rivet sets
Road scraper plows
Rock drills
Roll threading dies
Roll turning steel
Rotary shears

Scissors
Scrapers for bearings
Screw cutting dies
Scythe edges
Set screws
Shackle pins
Shears
Shear blades
Shear knives
Shoe dies
Skates
Skate blade punches
Sledges
Slim taper files
Special arbors
Special rolls
Spiking hammers
Splitting axes
Spoon forming dies.
Springs
Square blades
Stamp dies
Stamps
Star drills
Stay bolt dies
Steam shovel bucket
Steel letter stamp
Steering rigging
Stencil cutters
Stickers
Stone cutters' tools
Stone planers
Swages
Swaging dies
Swaging drills

Table blades
Taper reamers
Taps
Teeth
Threading dies
Ties axes
Tong cutters
Tong dies
Tongs
Tool posts
Track punches
Track sets
Transmission shafts
Trimming dies
Trip hammer dies
Trowels
Tube scrapers
Twist drills

Vises
Vise jaws

Washer punches
Wire cutting pliers
Wire drawing dies
Wood working tools
Wrenches
Wrist pins

000 tons of alloy steel was consumed. At present 85 per cent of motor car production in this country is concentrated in the Detroit district or within a 50-mile radius. This answers why the territory adjacent to Detroit is the center of alloy steel consumption.

Tools Take Much Alloy

The second largest consumer of alloy steel is the machine and small tool industry which absorbed 29 per cent of the total tonnage of this product made in the United States during 1925. Until a few years ago the New England states were credited with having within their borders the largest production of machine tools in this country.

About two years ago the center of the machine tool industry began to move westward and according to recent government statistics Ohio now is the leading state in the machine tool field. The value of the machine tools produced by Ohio now is running about three times larger than the value of the equipment produced by the state of Pennsylvania which is the second machine tool producing state in America. Massachusetts is third in the list although the valuation of its annual output of machine tools is only on a slightly lower basis than for Pennsylvania. With the automotive and machine tool industry absorbing 85 per cent of the alloy steel produced in this country at present, the largest market for alloy steel is to be found in the states of Ohio, Pennsylvania and Michigan.

The railroads consumed about 5½ per cent of the alloy steel produced in various forms during 1925. It is estimated that springs used for freight cars, locomotives, and passenger coaches built in 1925 absorbed approximately 24,000 tons of alloy steel. While the railroads are somewhat hesitant in heat treating their material because of the skilled labor involved yet the amount of annealed carbon vanadium steel which they employ for side rods, pistons, etc. is becoming proportionately larger each year, and is supplanting to a large extent ordinary carbon steel formerly used for this purpose.

Approximately 2 per cent of the total production of alloy steel in 1925 was absorbed by the agricultural industry.

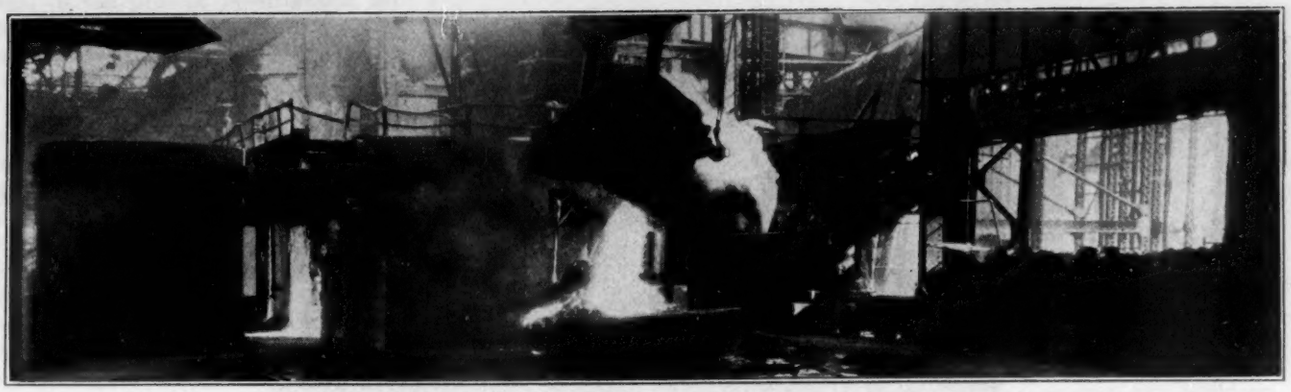
It is estimated that 5000 tons or more was used last year by the agricultural implement manufacturers for the sole purpose of plow beams. Formerly a rolled, flat section was used and to this particular section the shares are attached. Other applications to which alloy steel was put by agricultural implement manufacturers during the year just closed was for straight-tooth and spring-tooth harrows, and disk harrows used for plowing purposes.

Building Uses Little

For construction purposes only 0.06 per cent of the output of alloy steel in this country last year was used. Perhaps the widest application which alloy steel enjoys in the construction field is for bridges where a high initial tensile strength is required for the long spans. The grade usually required for this purpose is a 3½ per cent nickel steel.

The shipping industry probably was the smallest consumer of alloy steel during the year just closed, reports from manufacturers showing that only approximately 0.02 per cent went into this channel. Manufacturers exported about 2 per cent of their product while 6 per cent was used for miscellaneous purposes.

GEOGRAPHICAL DISTRIBUTION AND NUMBER BY STATES OF PLANTS ENGAGED IN THE MANUFACTURE AND PROCESSING OF ALLOY STEEL. SOME LOCATIONS HAVE SEVERAL DIFFERENT PLANTS



Engineering Progress Leads Industry To High Efficiency

ENGINEERING developments in 1925 contributed more to industrial efficiency than those of any year since the war. Low prices for iron and steel, changing market conditions and other factors constituted a challenge to the engineering and operating departments to reduce costs to new minimums.

Tangible evidence of the trend toward higher efficiency is not easily assembled, but there can be no question but what the steady rehabilitation of old plants and equipment, which has been accentuated in 1925, together with the improved transportation situation and other factors, is resulting in marked economies.

Perhaps the nearest approach to a reliable index of general efficiency in the iron and steel industry is provided by the ratio of finished steel output to the average number of employes reported annually by the United States Steel Corp. The average annual output per employe in the 10 years since the world war was declared is 53 tons as compared with an average of 49.1 tons for the 13 prewar years.

In 1925 the extent of rehabilitation is such that handsome returns in increased efficiency may be expected in future operations. Several famous old iron and steelworks were dismantled during the past 12 months and their quota of production assumed by modern units. Other works, notably the Homestead plant of the Carnegie Steel Co., are being almost completely overhauled. Many old merchant stacks have been modernized or rebuilt, steelworks re-equipped, rolling mills electrified and miscellaneous plants repaired and their obsolete equipment discarded.

New construction reflects interesting trends in design but few marked departures from conventional ideas. The newest large blast furnace conforms to the extreme hearth and bosh diameters now thought desirable. Open-hearth operators are giving more attention to refractories problems and are co-operating with firebrick manufacturers more freely than heretofore. A suspended roof of special silica shapes installed on an Ohio furnace is attracting attention because of its good service record. All steelmakers are watching the plans of the Ford Motor Co. as they are unfolded in anticipation of novel changes in melting, handling and rolling units.

Exceptionally large motors have made their appearance in rolling mills and new refinements in control have been developed. Mechanical doublers, electric roll heaters and other labor and time saving devices are being installed more generally in sheet mills than heretofore. Experimental applications of diesel motors for locomotives, interurban cars, tugs and ships have reached the point where the future for this prime mover seems more secure. Many engineering concerns previously engaged chiefly in building steam engines and machinery have gone into the diesel business in a large way.

In the manufacture of fabricated steel products, castings, forgings, etc., engineering progress is being enhanced in a substantial way by the activities of trade extension agencies.

Foundrymen utilized a year of only fair business volume in putting their plants in gear for more economical production and in furthering their study of new processes. Progress in handling sand, flasks and castings, in the use of permanent molds, in centrifugal casting and in die casting has been marked.

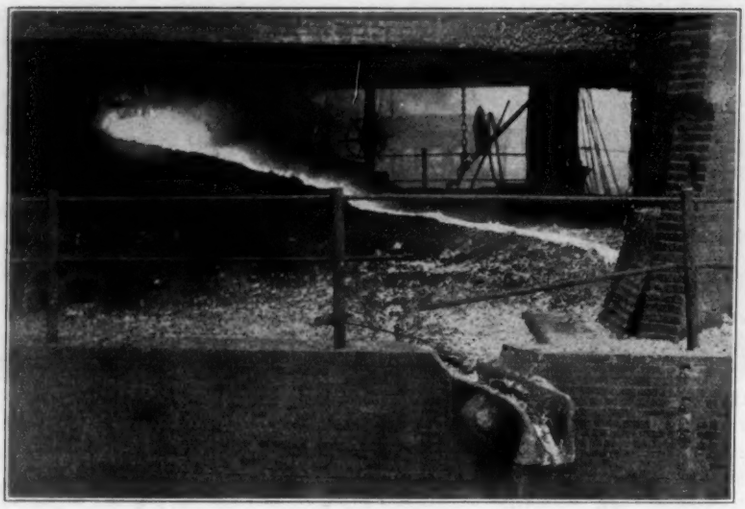
Welding is strengthening its foothold in the structural steel industry and has forged ahead in widening the use of the gas torch and metal arc in the fabrication of steel containers, machinery and other products.

Bolt and rivet makers are devoting more attention to their products. Several manufacturers are working with their customers to improve the conditions under which rivets are driven. Excessive heating is being discouraged and proper practice outlined. Heat treating of bolts and rivets in manufacture is undergoing interesting developments in which the manner of quenching is being studied intensively.

Output Per Employe Is Increasing

FIGURES FROM ANNUAL REPORT OF UNITED STATES STEEL CORP.

	Output of finished steel, tons	Average number of employes	Tons per employe
1902	8,197,232	168,127	48.7
1903	7,635,690	167,709	45.5
1904	6,792,780	147,343	46.1
1905	9,226,386	180,158	51.3
1906	10,578,433	202,457	51.2
1907	10,376,742	210,180	49.3
1908	6,206,932	165,211	37.5
1909	9,859,660	195,500	50.5
1910	10,733,995	218,456	49.2
1911	9,476,248	196,888	48.2
1912	12,506,619	221,025	56.7
1913	12,374,838	228,906	54.0
1914	9,014,512	179,353	50.2
PREWAR AVERAGE			49.1
1915	11,782,639	191,126	61.5
1916	15,460,792	252,668	61.2
1917	14,942,911	268,058	55.8
1918	13,849,483	268,710	51.5
1919	11,997,935	252,106	47.2
1920	14,228,502	267,345	53.2
1921	7,860,334	191,700	41.0
1922	11,785,331	214,931	54.8
1923	14,731,469	260,755	56.4
1924	11,722,902	246,753	47.5
POSTWAR AVERAGE			53.0



Ironmakers Study Quality of Product

By Ralph Hayes Sweetser

PROBLEMS outstanding in blast furnace practice during 1925 have been of quantity and quality of product rather than those relating to raw materials and construction. No retreat from the high standards of practice attained during 1924 was made, but ideas pertaining to the use of scrap in blast furnace mixtures and the need for low coke consumption, which held sway in 1924, were modified during the past year.

Blast furnace practice in the United States now is at the highest point ever attained, yet some of the methods lately adopted by ironmakers are being questioned by the consumers of pig iron. This applies to the product of steel plant furnaces as well as that of merchant furnaces. Apparently it is a symptom of the awakening of open-hearth men and foundrymen to the fact that although pig iron may appear to be rough and crude it really is sensitive to the influence of minute quantities of many different elements. This awakening, which is welcomed by the furnacemen, has been hastened by the activities of the American Foundrymen's association and by the formation of an open-hearth committee by the American Institute of Mining and Metallurgical Engineers.

During the past few years most of the problems of blast furnace practice have been in relation to the analysis and structure of ores and coke, and these problems have been mainly solved by the co-operation of ore operators, coke makers, coal producers and the iron masters. Naturally, they haven't all agreed with each other, but in the disagreements, discussions, research work and experiments, steady progress in blast furnace practice has been made.

Attention now is turned toward the finished product of the blast furnace—pig iron. In the author's article in the last annual number of IRON TRADE REVIEW, he mentioned the anomaly of practically ignoring the presence of carbon in pig iron and expressed surprise that carbon had been so long neglected in the specifications.

Carbon in pig iron no longer can be ignored. Foundrymen and steel men now are concerned not only with the amount of carbon in pig iron, but with its character and pedigree. The British Cast Iron Research association is studying "this question of structural or constitutional composition" and J. E. Fletcher in his exchange paper, "Some Fundamental Relationships in Cast Iron, Wrought and Steel Manufacture," presented at the Syracuse meeting of the American Foundrymen's association, emphasized "the need for good virgin metal in the form of pig iron of dependable chemical and structural analysis."

Blame Scrap and Driving

Consumers of steelmaking and foundry irons blame blast furnace operators because of the two prevailing methods for increasing output, namely adding scrap to the ore mixture and fast driving. Proof to substantiate the indictment against furnacemen is lacking, but enough evidence is at hand to warrant thorough research work, such as has been suggested by Dr. Richard Moldenke and others. Blast furnace men are just as ready to co-operate with the steelmakers and foundrymen to perfect the character of pig iron as they were to work together with the iron-ore operators and cokemakers in order to obtain regularity and beneficiation of iron ores, and improvements in the structure and analysis of cokes.

Meanwhile, blast furnace men will continue to use scrap in their mixtures only when it is profitable to do so. It would not be profitable to use scrap containing small amounts of alloys injurious to the pig iron; neither would it be profitable to buy scrap for blast furnaces at prices only a few dollars below the market price of pig iron.

Much has been said about the so-called "oxidizing" of pig iron by blowing too much blast through the tuyeres into the combustion zone. As a rule, blast furnace men believe that no such reaction can take place. Some investigators have said that the introduction of oxygen into the fluid iron at the tuyeres makes a stronger iron, but recently this theory has been refuted. Eckman and Jordan of the United States bureau of standards and Jominy of the University of Michigan report that "careful analyses of 12 charcoal and eight coke irons, whose mechanical properties previously had been reported by Jominy, failed to show that the stronger irons contained more oxygen than the weaker irons. . . . The values for oxygen in both the stronger and weaker cast irons were much lower than the general ranges of values reported by Johnson and by Oberhoffer. The vacuum fusion method of analysis

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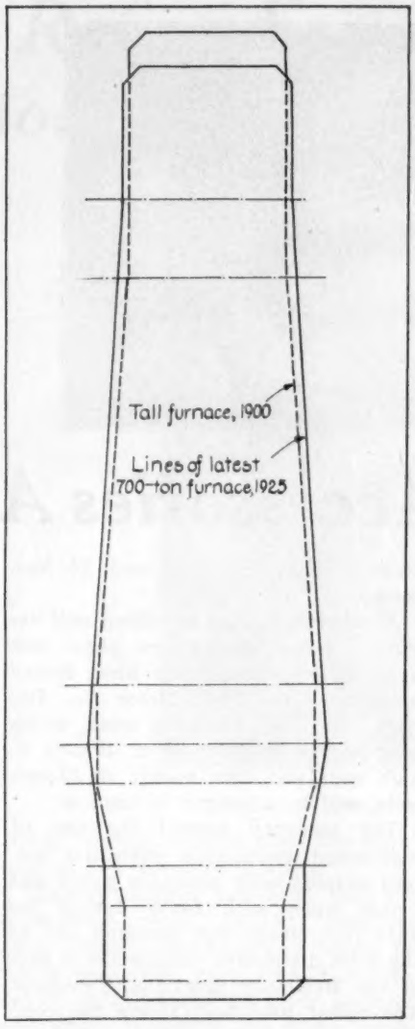
used in the present investigation for determining oxygen is more accurate, as applied to cast irons, than the methods employed in previous studies."

The second method for increasing tonnage—the use of miscellaneous steel scrap in the ore mixture—also is blamed for "oxidation" of pig iron, as well as for deleterious influences on the carbon in the pig iron. So much uncertainty surrounds the influence of scrap on the quantity as well as the quality of pig iron that the whole question should be further studied before the conclusions are considered as final. It must be remembered that the analysis of miscellaneous scrap bought in the open market is in itself an uncertain factor.

The money value of the use of scrap in the mixture is another question that is so hard to answer that many furnace managers stopped using it under the recent high level of scrap prices. Some form of scrap or iron-bearing by-product will continue to be used to enrich the mixture, providing that the price is not too unreasonable, but no satisfactory rule for determining the limit of a profitable price to pay for scrap has yet been accepted.

Blast Furnace Capacity

What is the capacity of a blast furnace? What is the pig iron capacity of our country? Although the rule for daily capacity of a blast-furnace adopted by the Southern Ohio Pig Iron and Coke association in 1920 has been generally accepted, there is no approved way for finding the annual capacity of blast furnaces. The question of annual capacity involves seasonal influences, life of furnace linings, cycles of cleaning hot blast stoves, spare engines and boilers, and several other items of construction, equipment and practice. It is impossible to have all units of a group of blast furnaces kept at the same high level of efficiency, and there is always a delay for relining each furnace in the group. The frequency of this relining delay now is being studied by refractories manufacturers and furnace operators.



The questions of blast furnace capacity are being asked by financiers as well as by operators, builders and owners. The measuring stick for rated tonnage should be made standard based on factors approved by a majority of all concerned. The blast furnace index based on the now famous theory of Col. L. P. Ayres of the Cleveland Trust Co. has become such an important forecaster that it is more essential than ever that the basis of the index be accurate. Blast furnace rating will be an important study for the year of 1926.

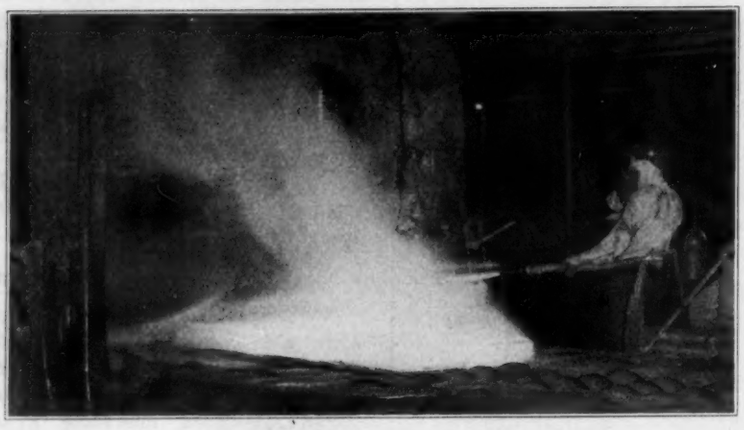
New Stacks Shorter and Broader

No. 2 blast furnace of the Youngstown Sheet & Tube Co. at Indiana Harbor, Ind., is a fair example of the combination of present day engineering ideas, good operating practice, and reasonable cost of original investment. Comparing the dimensions of this furnace, described in IRON TRADE REVIEW, Dec. 3, 1925, with those of the large furnaces of 25 years ago, it is found that decreased height, increased hearth diameter, and increased tonnage are the important changes.

	Cambria	Youngstown Sheet & Tube Co. No. 2, Indiana Harbor
Year built	1920	1925
Hearth diameter, feet....	12.5	20.5
Bosh diameter, feet....	21.0	24.0
Height, feet	98.0	95.0
Rated capacity, tons daily	45.0	70.0

Some of the largest furnaces built 25 years ago with heights of 107 feet 6 inches and hearths of 13 feet 6 inches to 14 feet 6 inches are being torn down and replaced with stacks about 92 feet high and with hearths about 21 feet in diameter. The widening of the hearths with about the same bosh diameters gives the steep bosh angles now necessary for good furnace practice.

The work of the United States bureau of mines in blast furnace problems has included research work at blast furnace plants in different parts of the country as well as at the experimental furnace in Minneapolis, Minn., and in laboratories.



Rolling Mill Accessories Are Improving

EACH year witnesses the extension and replacement of rolling mills in the United States and any changes in design usually are along conventional lines. The year just closed was no exception, for while there were a number of distinctive changes in the design of rolling mill subsidiary equipment the advancements made in actual mill design were few.

The 44-inch 2-high reversing blooming mill built for installation at the Homestead works of the Carnegie Steel Co. perhaps stands out as the most distinctive new development in rolling mill design. Two 150 horsepower motors connected in series operate the screw-down which is of the spur and bevel gear type. The feature of this screw-down is associated with the arrangement for adjusting the rolls. One of the bevel gears is dropped out of mesh which is readily accomplished by one of the millwright's crew, thus permitting the lining-up to be accomplished with the opposite screw. Another feature of the mill is that the rolls and their bearings can be removed in one operation.

Two feed rollers forged of solid steel are provided on the entrance and exit side of the mill the pair nearest the main rolls being mounted in a bore in the housing and the others being mounted in bearings on the face of the housing. The train of gears carried in a separate housing on the shoeplate and driven in turn by the last roller in the mill table actuates these rollers. The top roll is balanced by a hydraulic cylinder, 17 inches diameter. The total weight of this mill approximates 714 tons. The housings weigh approximately 76 tons. The mill is designed to process ingots up to 20 tons, and will roll billets to a minimum size of 4x4 inches, slabs 3x40 inches and blanks for further reduction into 15, 18, 20 and 24 inch beams.

Another departure in rolling mill design is found at the new plant now under construction at the River Rouge division of the Ford Motor Co., Detroit. The new blooming train, which will include four stands of 42-inch 2-high rolls and four stands of 32-inch rolls, will be arranged in tandem.

The tendency toward the use of high-speed continuous operating motors coupled with reduction gears was looked upon with favor during the year just closed and standing out as the most distinctive installation is that of the McKinney Steel Co., Cleveland. The motor used for driving the company's new 21-inch continuous billet mill and 18-inch continuous sheet bar and billet mill is rated at 9000 horsepower and said to be the largest motor ever built for steel mill work. This motor will use current at 6600 volts and will operate at a speed of 107 revolutions per minute. During the year just closed 11 heavy duty motors were built in this country, four for driving blooming mills, two for driving large structural mills, and one for a combined universal plate and roughing structural and merchant mill.

A novel device for removing surface flaws, which appear at various points during the process of conversion from ingots to the finished product, was brought to the attention of steel manufacturers. The device, which cleans billets and sheet bars during the process of rolling without reducing the tonnage, consists of vertical and horizontal acting knives. The first of these scrapes the billet top and bottom as it leaves the preceding pass, while the second scrapes the sides.

More than 65 mechanical doubling machines were completed last year for installations at various hot mills in this country for doubling packs of black plate during the hot rolling process. A large number of machines also was installed for feeding black plate into the tin pots mechanically. The use of electric heaters for preheating sheet and tin mill rolls on the warming-up turn was extended last year, seven initial installations having been made in this country.

Straightening machinery underwent marked changes in design during the year just closed. A disk straightener for rounds from 4 inches in length to regular bar length was developed. While a straightener of the cross roll type was designed for conduit type guaranteed to operate at a speed of 250 feet a minute. Other improvements were made in the design of top and bottom roll type flat and shape straighteners and round straighteners for polishing and straightening shaftings. The year just closed also witnessed an installation of a cross roll cold tube straightener for handling material up to 13¼ inches. This is said to be the largest cross roll straightener yet built.

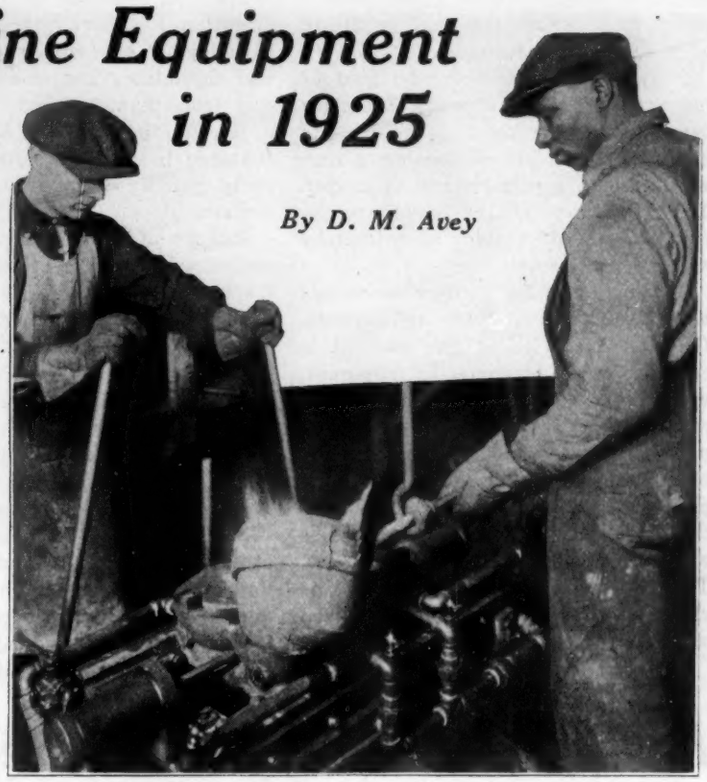
Higher efficiency was achieved in the design of several types of roller levelers. One such machine developed during the year just closed is for use in full finished sheet mills where the product is leveled directly off the mill. The leveler is driven from a universal coupling from a gear box running in oil. The coupling is of the ball and socket type and is made to insure against end vibration, backlash or looseness regardless of whether 31 or 10 gage sheets are being leveled. Another type of roll leveler is the design to eliminate the crosswise dish or bow.

A radical departure in the design of wire drawing machinery was brought to the attention of wiremakers in a new machine equipped with an adjustable-speed motor for each wire block. Each motor permits a wide range of working speeds and the drawing of wire in any grade or size within the limit of the machine at the proper speed to meet proper specifications as to physical tests and surface finish.

A plate bending machine brought out during 1925 has an important feature incorporated in its design. An air cylinder is provided for lowering the yoke for the removal of plates rolled to full circles. The air cylinder serves to eliminate the use of a crane and this feature materially increases the speed at which plates may be handled through the machine.

Foundrymen Refine Equipment and Methods in 1925

By D. M. Avey



Permanent molds are gaining favor

NEW ideas in manufacturing processes are brought forth either through the demands of intense production or when stimulated by the need for economy under a low rate of operation. During 1925, the foundry industry has traveled over no peak of prosperity, nor has it descended into the depths of depression. Throughout the past year an average has been maintained which called forth no outstanding developments or radical advance in practice. The greatest assets which 1925 can show in the industry are improvements and refinements in existing machinery and methods.

Conditioning, handling and conservation of sand have engaged much attention. The use of mixing, blending and aereating machinery has broadened. Prominent manufacturers of such equipment have developed complete units embodying conveyors to carry used sand to the mixing machines, mixers and revivifiers synchronized to work together and elevating and discharge conveyors for carrying the prepared sand to molding machines. One maker has made a complete unit of its sand return, continuous mixer, sand delivery, molding and mold conveying equipment.

In line with the application of earlier ideas to advanced practice, two large casting interests have adopted the hydraulic principle to removing cores and adhering sand from castings after pouring. This idea which probably had its inception in the practice of placer mining, has been tried from time to time in years past. A number of years ago a prominent foundryman used a common firehose on city hydrant pressure to knock core sand from large engine and glass house castings. The 1925 developments have brought refinements to the method of directing the high pressure stream of water, in protecting the operators, in bringing the castings directly under the nozzle stream, and finally in the methods of removing the sludge and water. Greatly reduced costs are credited to this form of cleaning.

Marked advance has been made in permanent mold casting practice. Sash weights, which form a staple to which numerous gray iron foundries resort during times of slack demand and which constitute the major product of a few specialty shops, have been made successfully in permanent molds for a number of years. Standard permanent mold rigs for sash weights now are manufactured for sale to foundries.

Simultaneous and independent progress has been made in several other permanent mold developments during the past year. It now is possible to cast fragile and intricate parts such as pistons, electric irons, small gear cases and even radiator sections from gray iron in metal molds. The tendency of castings of this nature to chill in the thin sections has been overcome in some instances by attention to the metal mixtures, to coating the surface of the mold and removing the castings as soon as the initial set is attained.

In another line of investigation, an oil-cooled molding machine has been devised. The mold is made of camparatively light section, with a thermostat close behind the mold surface. This thermostat controls valves through which oil is circulated through the mold, carrying the heat quickly from the mold surface, and maintaining a uniform temperature throughout the recesses of the mold.

Mold life, which has been a limiting factor in the early experimental work on permanent molds, seems to have been lengthened appreciably by developments announced during 1925. One firm which is marketing single mold and rotary type machines, the latter with a multiplicity of molds mounted on a turntable, reports highly satisfactory durability. Further, speed of operation of the latter device has been developed to the point where a maximum of 2000 castings weighing about 7 pounds has been made in five hours.

Progress has been made during the year in die mold or pressure type casting machines. The application of this principle is limited to low temperature metals, but under modern practice it is possible to make the most intricate shapes in die molds accurate to machine dimensions, in aluminum or white metal alloys.

Melting practice has shown few outstanding changes. Refinements in electrical furnaces have been made to increase ease of mechanical operation. One manufacturer is supplying a device for controlling the power demand or peak load charge. Further extensions of powder coal firing both for melting and heat treating service are reported. Perhaps the most marked development during the year has been the application of individual coal pulverizing equipment for use with each unit, instead of a central

The author is managing editor of *The Foundry*, Cleveland.

plant from which the fuel is drawn to a number of furnaces.

Simplification has been the goal of makers of high frequency induction type electric furnaces. These units apply the principle of passing a current through a primary coil of copper. The secondary is the metal to be melted, placed within a refractory crucible or vessel.

Melting units for nonferrous metals have gained by 1925 refinements. Growth in service of gas and oil in crucible type furnaces is apparent, with improvements in economy. The recuperative principle has been applied to a new crucible furnace, while in another type recently developed, preheating is obtained by circulating the entering air through a chamber which forms the shell of the furnace. The air then is drawn out of this chamber into the burner to be mixed with the entering spray of oil.

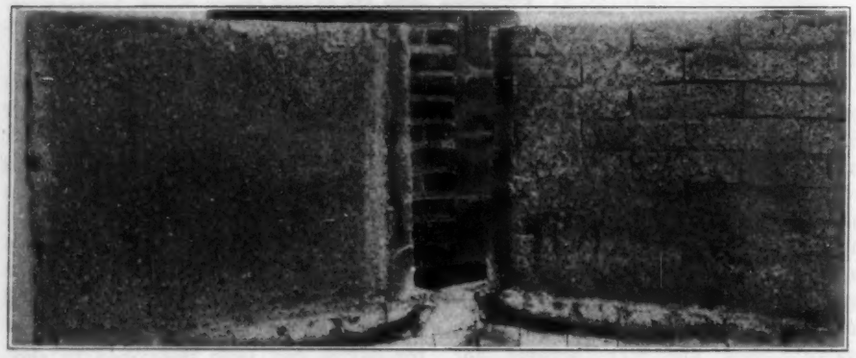
In gray iron metallurgy, greater attention has been given to the use of alloying elements such as nickel and chromium. The so-called pearlitic cast iron, manufactured abroad under a German patent, has not found acceptance in America, although apparently gaining some ground in Great Britain.

Makers of cast iron pipe have installed additional centrifugal molding machines built on the DeLavaud principle. One large southern pipe interest has developed a method for casting pipe in hollow sand molds which are rotated in a manner similar to that employed with the iron molds in making the DeLavaud pipe. A large new foundry employing this method of manufacture is contemplated.

Steel foundries have given greater attention to pressure and heat resisting alloys, having in mind the demand for such products for steam power plant fittings and also under the strenuous service of high pressure cracking stills recently finding favor in oil refineries. A number of steel castings makers have developed their own alloys and manufacturing practice and market their products under trade names.

Investigation of the X-ray study of castings has gone forward. Originated to disclose defects in steel castings, where a correct diagnosis of such faults might permit correction in molding or casting practice, the application of this instrument to metallurgical research has been extended to nonferrous fields. Here it has been found possible to use the X-ray to find hidden defects which might develop under machining, or which might result in failure under service. These applications, in addition to the one previously mentioned may lead to a wider use, although the initial price and operating costs prevent the X-ray instrument from finding general favor.

Refractories Makers Extend Research Activity



By L. S. Longenecker

Monolithic clay wall (left) and burned clay brick and cement wall (right) after being subjected to standard government test

PROGRESS in refractories in 1925 has been featured by a rapidly expanding interest on the part of both users and makers to further determine plant operating conditions by study and research. Throughout the year noteworthy committees and refractory groups have been formed to better facilitate study and research work. This fine co-operation of effort, the increased scope of productive activity and the high caliber of intelligence behind this work gives added authority to the results as published from time to time.

Continues Research Work

The refractories fellowship at Mellon institute is making investigations and tests on the present load, spalling and refractoriness tests with a view of improving their accuracy and effectiveness. At present deformation and load tests are being made on a wide range of refractory materials. Two lines of research work partially completed this year have led to patent applications. One is for a special treatment of refractory materials and the other is for a special refractory body that will withstand spalling.

In March the American Refractories institute was formed superseding the American Refractories association which was disbanded a short time previous. The new organization operates along somewhat the same lines as the old one, but with a greater portion of its funds being used on research work. Both consumers and producers of refractories are well represented in this new organization and its scope has thus been greatly increased. It is now possible for consumer, manufacturer and research man to co-operate and together digest problems of common interest and work out plans of successful operation.

Some time ago a special research committee of the American Society of Mechanical Engineers was formed by several groups of central power plant operators, in order to study boiler refractories. Funds for carrying out this research work are being furnished by a number of power plants and refractory manufacturers. Reports published from time to time have disclosed much valuable boiler refractory data. Comparatively low temperatures are shown in these reports. Temperatures above 2700 degrees Fahr. were uncommon, while those not exceeding 2500 degrees were frequent and in many cases the rule.

Investigate Boiler Conditions

The Commonwealth Edison Co. is making extensive studies at the University of Illinois on the slag action of boiler refractories. In view of the low boiler temperatures cited, this investigation will be watched with much interest. The Stone & Webster Co. also is studying the properties a good clay refractory should possess in or-

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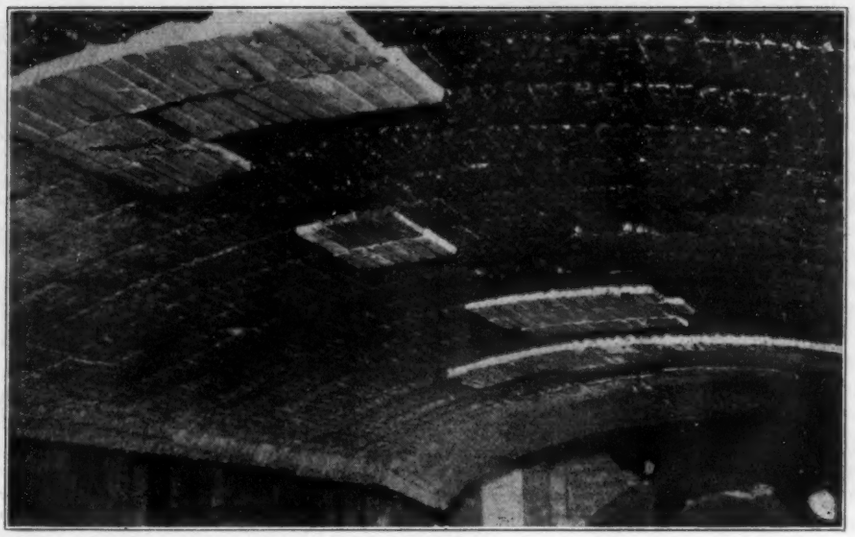
der to give the best service under given furnace conditions.

The United States bureau of mines has completed a plant survey of a score or more industrial plants in the Pittsburgh district and has this information about ready for publication under the title, "Service Conditions of Open-Hearth Refractories." This treatise will embrace the conditions imposed upon the three generally used open-hearth refractories silica, chrome and magnesite in burned bricks and shapes. Present plans include a continued study of temperature and heat flow through refractory walls, and also studies of conditions and bottom materials as found and used in the present basic open-hearth bottom service. These plant observations and findings will be studied and corroborated by special laboratory furnace tests.



SUSPENDED OPEN-HEARTH ROOF WHICH MADE RUN OF 428 HEATS WITH THREE MINOR REPAIRS

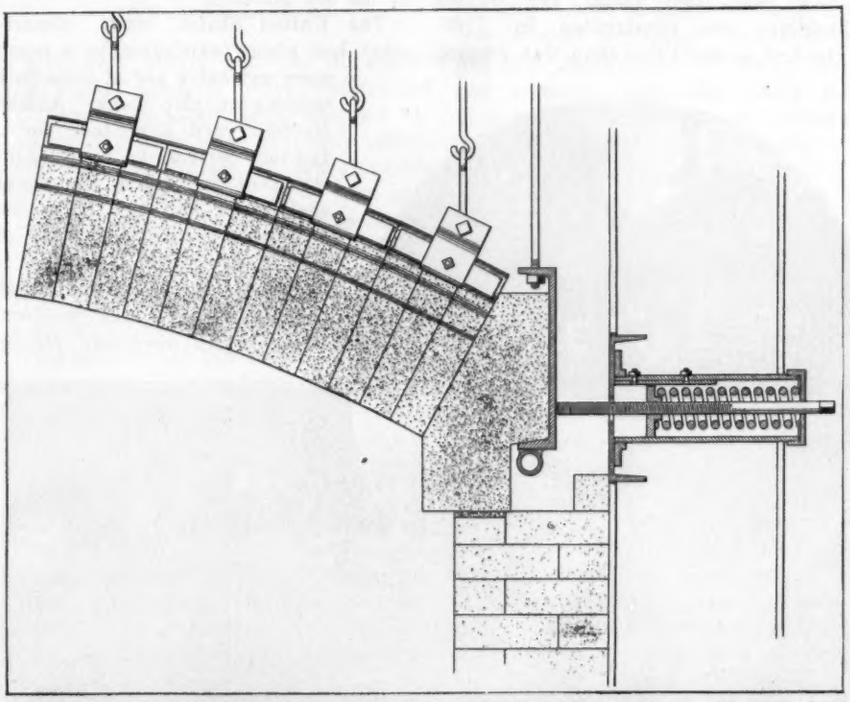
Improve Plant Equipment

Marked advance in the refractory manufacturing field has been made in 1925. Many companies have added new and expensive plant equipment in order to better their present products. Molding machines for silica brick now are being used in increased numbers and are proving highly satisfactory. A special planing or shaving machine for making a uniform sized clay brick is being successfully operated. The planing or shaving operation takes place after the first repress, and in this manner all bricks are made of a definite uniform thickness. A large clay brick manufacturer in the Pittsburgh district has been operating with marked success the first large continuous kiln for burning fire brick, and is now building a second kiln of the same type. Other plants also are successfully operating continuous high-temperature burning kilns.

Numerous service installations of monolithic clay walls in 1925 have demonstrated that for certain furnace requirements, this type of clay refractory possesses a number of advantages. The service records of these walls have shown marked economies in refractory costs.

The accompanying illustration shows a burned clay brick and cement wall section on the right, and a monolithic clay wall section on the left. Both sections were given the standard government clay brick test. The monolithic section showed a temperature gradient curve of at least 300 degrees below that of the burned brick section. The air leakage through the monolithic structure obviously is less than through the burned brick wall.

The plastic condition in which refractory material for monolithic wall work is furnished, makes it well adaptable for wall construction requiring special shapes. It can be worked and pounded into place with a contour of rounded corners and smooth curves, which in turn means high furnace operating efficiency. Where desired, the straight wall section can be laid up with brick and the special corners and curves put in with plastic material.



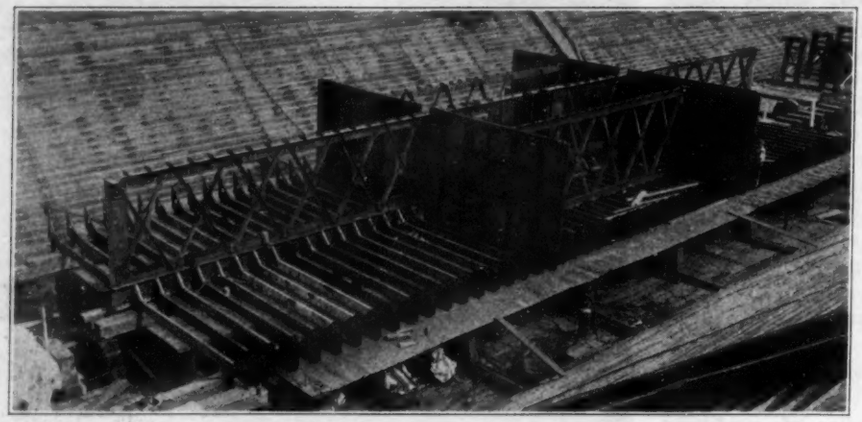
SECTION OF SUSPENDED ROOF SHOWING SUPPORT AND SPRING SET FOR COMPENSATING FOR EXPANSION

Adopt Buying Specifications

Tentative buying specifications for silica brick and magnesite brick, as drawn up and put in operation a year or so ago by a large steel company in the Pittsburgh territory, have met with remarkable success. During 1925 a number of plants, using silica and magnesite refractories in quantity, have adopted the buying specifications in whole or part.

Several special suspended silica open-hearth roof test installations have been made, one on a 70-ton unit in the Ohio district showing interesting service results. In this type of construction the excessive "squeezing" load, as found in a common sprung arch, is eliminated. Relieving the tiles, especially the hot inner tile ends, from this crushing load has just about doubled the service life as shown by the service records secured in these tests. The special interlocking roof tile, described by the author in the

(*Concluded on Page* 40)



Pontoon for 120-ton derrick in which shell, deck and two bulkheads are being welded. About 6650 feet of fillet welding is involved in this job.

The illustrations at bottom of page show a swimming pool at the Officers club, Norfolk, Va., constructed by arc welding steel plates

Welding Gains Foothold in Fabricating Field

By James W. Owens

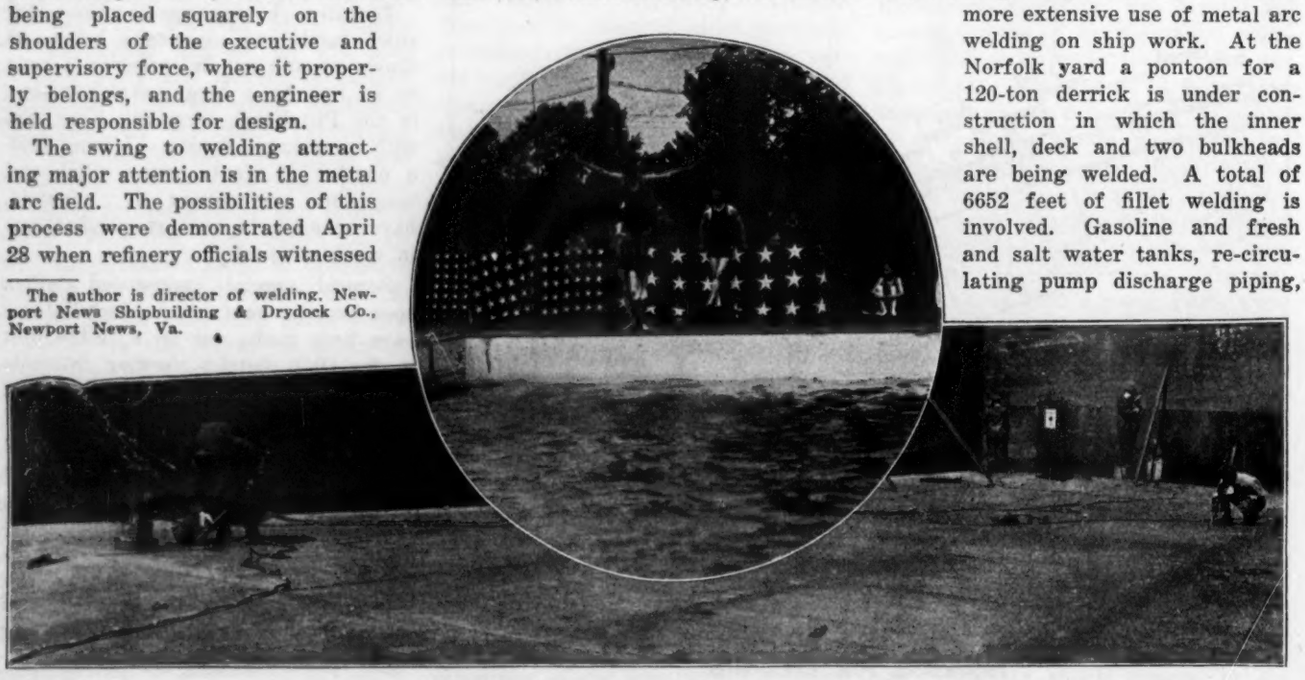
ONE of the outstanding industrial developments during 1925 was the extensive use of welding for mechanical joints. To those who have visioned and crusaded for this evolution, it seems that welding at last is coming into its own and that the conservatism which has retarded its wider application is being supplanted by sound scientific and business aggressiveness.

Much has been said about the "personal element" in welding and the "impossibility of testing welded joints." The first charge is not justified for good welders can be selected and first class workmanship maintained by suitable tests. The second criticism in general is not true in welding pipe, tanks and pressure vessels because such work invariably can be subjected to hydrostatic, hammer, blow and other tests. Responsibility for sound welds is being placed squarely on the shoulders of the executive and supervisory force, where it properly belongs, and the engineer is held responsible for design.

The swing to welding attracting major attention is in the metal arc field. The possibilities of this process were demonstrated April 28 when refinery officials witnessed a hydrostatic destruction test of a cylindrical steel shell 2½ inches thick, 5 feet in diameter and 10½ feet long. The shell was fabricated and the test conducted by the A. O. Smith Corp., Milwaukee, prior to making several gasoline cracking stills. The shell was almost identical with the stills, except that they were 41 feet long. The shell had four longitudinal welded joints, while one head consisted of nine sections of 2⅝-inch metal welded together and the other a steel casting 3½-inches thick. Both heads of the stills were welded. In the tests, all welds remained tight, failure occurring in the cast head after the welded shell had been subjected to a fiber stress of 56,000 pounds per square inch.

At least two metal arc welded buildings were constructed in 1925. The first, a 40x60-foot shop, was erected by the Eola Electric Arc Welding Co., Eola, Ill. The total cost of a similar building in which riveting was employed was 70 per cent more than that of the welded structure. The second welded building was 100x150-foot two-story and basement garage built by the Morgan Engineering Co., Alliance, O., for an automobile sales company in Canton, O. The building was originally designed for riveting and the advantages of simplified joints inherent in welded construction were not utilized, nevertheless the contractors effected a saving of 25 per cent in estimated shop labor. Metal arc welding was also used extensively in a 12-story department store in Detroit where 103 floor girders were welded to the columns of an old building.

The United States navy department has given permission to a much more extensive use of metal arc welding on ship work. At the Norfolk yard a pontoon for a 120-ton derrick is under construction in which the inner shell, deck and two bulkheads are being welded. A total of 6652 feet of fillet welding is involved. Gasoline and fresh and salt water tanks, re-circulating pump discharge piping,



The author is director of welding, Newport News Shipbuilding & Drydock Co., Newport News, Va.

tank filling, piping, with necessary fittings, etc., are being welded at the Norfolk yard. Four 45-ton welded battle towing targets are being constructed by the navy department and when these are completed the navy will have built 11 welded targets at a saving of thousands of dollars. A 100,000-gallon swimming pool was constructed for the Officers' club at Norfolk in 1925, and mild, nickel and chrome molybdenum steel tubing used in airplane fusilage construction has been welded satisfactorily, by the metal arc. During the year, gas welding and cutting have still further intrenched themselves industrially. One of the applications of the gas torch, not much utilized at present, but having great possibilities is cutting holes for assembly bolts and rivets. In erecting a riveted chemical plant durng the year, the gas torch was employed extensively for cuttng columns, beams, etc., to length and cutting rivet holes in columns and plates, and girder and clip angles. The gas welding torch was used in this building for fabricating railings, stairways, chutes, hoppers etc. and attaching conduit to the steel work. The Linde Air Products Co., in 1925 constructed a number of pressure vessels of ¾-inch plate, 7-feet in diameter, 36-feet long, designed for a working pressure of 125 pounds. The company followed a rigid "procedure control," and no difficulty was experienced in complying with it. The base metal was of fire box quality, the joints being of double bevel butt form.

The laboratories of the Union Carbide & Carbon Co., have developed a "high test" welding rod which it is claimed gives a weld of 60,000 pounds per square inch tensile strength, a consistent improvement in the quality of the weld metal over the ordinary rod, 17 to 45 per cent greater speed of production, with a consequent lower cost per pound of metal deposited.

ARC WELDING STRUCTURAL STEEL IN THE FIELD

In welding nonferrous metals and cast iron (when work can be preheated) gas welding still holds almost undisputed sway. Progress in resistance, spot, butt and seam welding has been chiefly marked by a wider application of these methods in repeat production processes rather than in new developments. Higher production has been secured by using machines having a higher kilowatt-ampere rating. In thermit welding progress has been made in eliminating blow holes and cleavage planes in the weld. The first-mentioned improvement was secured by developing suitable molding material to withstand the high temperature of the thermit reaction and yet have enough porosity to allow the gases to escape through the mold. The second improvement was obtained by carefully proportioning the gap, width and thickness of the collar and reducing the size of the riser to a minimum. The cost of thermit welding was decreased one-half by using a smaller quantity of thermit and smaller and fewer crucibles.

Electrical Industry Is Building Larger Units

By John Liston

IN 1925 steam turbines of exceptional capacity were constructed and high steam pressures and superheating were more generally adopted. Certain classes of transformers were also carried to new high-unit ratings, with corresponding increases in their switching equipment.

In transportation, there was a further adoption of the economical oil-electric locomotive, a record-breaking cross-continental run by an oil-electric car, and an increased use of gas-electric buses for feeder service to railways. Efforts were continued to reduce the weight of city and suburban railway cars, and the development of a practically noiseless car of this type was undertaken.

The automatic control principle was utilized for larger machines in power plants and substations, and its use was further extended in railway, mining and industrial power systems. Special control apparatus was designed for new applications of motor drive, and numerous ingenious relays were produced for actuating and protecting industrial control and automatic station equipment.

Research work revealed factors of fundamental importance in cable characteristics and made feasible the construction of cable conductors insulated for higher potentials. Testing transformer sets were constructed for the highest commercial-frequency voltages so far secured, and were utilized in a variety of investigations of which those on lightning arresters were especially valuable.

The field of usefulness of the high-frequency type of induction furnace was widened by achieving successful operation at considerably reduced frequencies. Industrial heating and the use of automatic welding machinery made further gains, while equipment for electric household refrigeration was produced and sold on an unexampled scale.

From "Some Developments in the Electrical Industry During 1925" to be published in the January issue of *General Electric Review.*

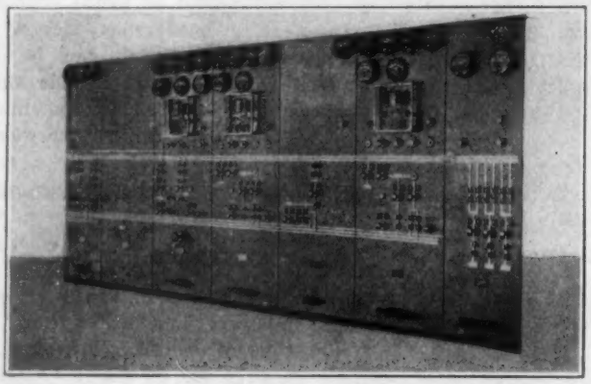
By H. W. Cope

THIS is the electrical age. Economic conditions are rapidly changing. Developments in the use of electricity command the attention of the entire world because electric power today serves all branches of modern civilization.

Generating units of a size never before thought possible are in course of construction. Synchronous condensers and frequency changer sets of greater size and efficiency than ever before attained have been placed in operation. The greatest locomotives ever built are moving coal from the West Virginia fields with an ease and smoothness of operation considered impossible a few years ago. Diesel electric drive has been adapted to ships, making possible the centralization of their control in the pilot house, with the result that vessels so equipped can be handled with the ease of a

From "Engineering Achievements of the Westinghouse Electric & Mfg. Co. for 1925." The author is assistant director of engineering of that company, at East Pittsburgh, Pa.

Sheet Steel Gains Favor for Switchboard Panels



A DEVELOPMENT of importance to power house and switchboard practice is the introduction of sheet steel switchboards, which now seem destined largely to supersede present slate and marble panels. Lightness, durability, strength and excellent appearance are some of the qualities which recommend this construction. Each panel with its frame is made of one piece of sheet steel with corners suitably turned and welded. With this new development is also included the assembly of completely enclosed steel switchboards for low tension power and supply distribution. The front of the panel equipment is of sheet steel.

modern gasoline propelled automobile.

The electrification of rolling mills continues at a high rate and several new mills with motor drive have been contracted for during the current year. The increasing appreciation by mill operators of the advantages inherent to adjustable speed drives for certain types of mills is evidenced by the large number of direct current machines specified by buyers.

Automatically controlled substations in steel mills are coming more and more into popular use. A new design of slip regulators has been developed for steel mill service which does away with external electrode cells. A novel feature of the new design is the complete enclosure of the cells so that the possibility of leakage of the electrolyte is eliminated.

Tremendous strides have been made in the control of variable speed, direct current, compound wound motors for steel mill drive for the special applications to tandem rolls for rolling hot steel strips at high speed. This is evidenced by the fact that control of speed is guaranteed for a variation of not more than 2 per cent from "no load" to "full load" at any speed from full field to the maximum weakened field value. This is possible due to the new design of inherent speed regulation so arranged that when once a speed has been set no adjustment of any kind is necessary.

There has been rapid development of electrically heated lead baths for heat treating steel tools. One installation contains 22 baths with a total rating of 1092 kilowatts.

Heat Treating Goes Ahead in 1925

By H. M. Boylston

IN THE last ten years there has been unusual and increasing activity in research on heat treatment of steel, metallographic and other methods of physical analysis and development of heat treating equipment and auxiliaries. The year 1925 marks the climax of these activities with no apparent indication of a lessening interest.

At present approximately 3,000,000 to 3,500,000 tons of steel is heat treated annually, the automobile industry showing greatest progress, railroads the least. The latter are beginning to appreciate heat treatment for certain purposes, such as material for locomotives and cars.

Among greatest advances during the year are the development of electric heat treating furnaces and attempts to increase the efficiency of gas burning furnaces by recuperators and automatic controls. One new electric furnace for tempering hardened steel uses a novel fan system for providing uniform temperature throughout the furnace. Design of furnaces for heating salt baths has been advanced. S. P. Rockwell developed a commercial electrically heated hardening furnace for use with the dilatometric method of heat treating. New pyrometers of the recording and indicating types embody principles of simplicity, ruggedness and interchangeability of parts combined with high accuracy.

Unusually high tensile strength with

A special quenching device designed to provide a drastic water quenching for low carbon steel bolts and rivets. Unusual tensile strengths as high as 160,000 pounds per square inch with high ductility have been secured

The author is head of department of mining and metallurgy, Case School of Applied Science, Cleveland.

high ductility in low carbon steels was obtained by R. H. Smith. Using a special quenching device designed for commercial production of rivets and bolts, he secured tensile strengths as high as 160,000 pounds per square inch on 0.09-0.15 per cent carbon steels. Continued efforts were made during the year to extend the use of the metallurgical microscope to unusually high magnifications. F. F. Lucas did pioneer work in the use of ultra violet light for high power photomicrography while R. G. Guthrie developed special methods of preparing samples for photomicrography at high magnifications. A special method of preparing specimens for examination at ordinary magnifications also was worked out.

Further X-Ray Work Done

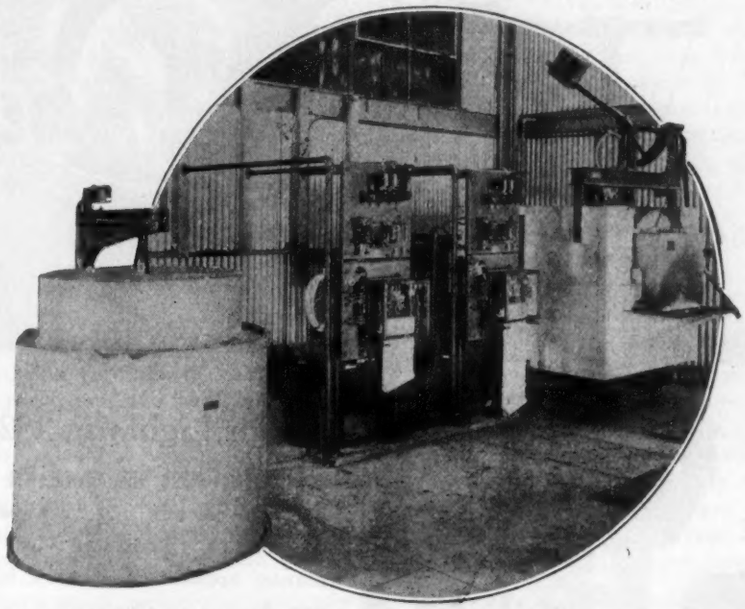
Application of the X-ray spectrometer in the examination of metals was advanced further in 1925. Work done on hardened ball steel after tempering at various temperatures showed that austenite invariably is present in the specimen; that this austenite transforms at temperatures between 200 and 260 degrees Cent.; and that during this transformation, the formation of an intermediate hard product, martensite, is indicated. This intermediate product was subjected simultaneously to tempering owing to the prevailing temperature.

Experiments to show the effects of initial temperature and mass in quenching high carbon steels was conducted by the bureau of standards. The cooling velocity at 1330 degrees Fahr. was taken as the best measure of the hardening produced and relations were developed between this and the size and shape of the steel quenched. Work also was in progress at the bureau to determine which of the governing factors in aqueous quenching solutions are the predominating ones, so that prediction as to the solutions and the concentration necessary to give the desired cooling velocity can be made. Motion pictures were taken of samples during actual quenching.

Dr. J. A. Mathews pointed out that in all normal hardening mediums for high carbon steels and the usual engineering alloys steels, austenite always is present with martensite; that in a wide variety of alloy steels, notably those capable of hardening readily in oil, there is more austenite present after oil quenching than after the desired water quenching; and that austenite is a cause of increased magnetic permanence of retentivity in those alloys capable of hardening readily in oil.

In seeking fundamental factors for obtaining sharp thermal curves, it was recommended by investigators that a pear-shaped specimen be used for thermo-critical determinations. Magnetic permeability of silicon steel crystals having their cube edges perpendicular and paralled to the direction of the applied flux was found to be from 10 to 25 times as great as those crystals having their cubed edges at an angle.

During the year considerable data were obtained on the hardness, toughness, shrinkage, and microscopic properties of oil and water hardening types of low tungsten tool steels containing somewhat over 1.00 per cent carbon and 3.00 per cent tungsten.



TWO AUTOMATICALLY CONTROLLED ELECTRIC FURNACES IN A MODERN HARDENING ROOM. SUCH EQUIPMENT HAS UNDERGONE RAPID DEVELOPMENT DURING THE PAST YEAR

Comparative slow bend and impact notched bar tests on steel and other metals were carried out to determine whether the slow bend test may be used as a substitute for, or as an addition to, the impact test. The slow bend test was found less convenient than the impact test for ordinary routine practice. An impirical formula was derived showing the slow bend or impact value as a sum of two terms, one of which is proportional to the radius of the notch and the other to the square of the net thickness of the specimen. For brittle materials, the impact and slow bend values are greatly affected by the radius of the notch, but are little affected by the net thickness of the specimen. For tough materials, the opposite is true.

Heat Treats Welded Tubing

By investigation in 1925, it was found that seamless steel tubing of chromium-molybdenum steel or sheets of chromium-vanadium steel for airplane construction can be welded advantageously by a special operation with steel welding wire. The advantage is not great compared with the low carbon steel wire. Heat treatment for all welded tubes and sheets made of these steels was recommended.

Prof. Albert Sauveur developed a new durometer for testing the hardness of steel and other metals by measuring the lateral rebound of a 10-millimeter ball after falling vertically on a prepared surface of the specimen, which was set 45 degrees to the vertical.

Cold Working Is Studied

A process of manufacture in which the physical properties of large size simple hollow cylinders, such as gun tubes, may be greatly increased over the usual properties was developed at the Watertown arsenal. The effect of annealing on the elastic strength of the cold worked simple and compound cylinders after different amounts of cold working had been applied was studied in detail.

A practice for the carburizing and heat treatment of carburized objects was formulated by B. F. Shepard and was adopted as tentative recommended practice by the American Society for Testing Materials. Among investigations dealing with high speed steels was one conducted by the bureau of standards dealing with the addition of nickel, tantalum, cobalt and molybdenum. Preliminary results suggested that the advantages gained by the addition of nickel and cobalt are associated with heat treatment rather than composition.

High Lights in 1925

AMONG 1925 machine tool improvements are centralized control as illustrated by the planer; application of work handling devices as represented by the hoist built on the shaper and pneumatic table lowering device on the drill press; better motor placing as shown by the heavy drill; more sturdy construction as typified by the shaper; greater productiveness as represented by the double milling head; increased accuracy provided by the indexing table; and use of welding in frame construction as used in the special driller and tapper.

Tool Builders Introduce Machines for Higher Production

By E. F. Ross

AS WAS the case in 1924, developments in machine tools during the past year have been confined largely to the improvement of already well proven types and models. While a few new units have been brought out for use in the metal cutting field, by far the greatest number have been modified redesigns. With all industry operating at a high rate in 1925, machine tool builders have been furnished with an incentive not equaled since the war period and the year closes with order books well filled. This revival in equipment demand has played an important part in the introduction of better machines.

Considering all types of machine tools, outstanding developments in 1925 appear to be greater strength and rigidity, higher power, centralization of control, more speed and ease in operation, a more extensive application of individual motor and unit drive, further use of roller and ball bearings and improved lubrication. On some classes of automatic equipment, the application of magazine and hopper feeds has been a factor to increased production. As a result of the high efficiency of tool steels and the added size and strength of machines, faster and heavier cutting has been made possible. Although not used to any great extent but offering considerable possibility is the use of welding in equipment manufacture. One special machine was built by this method.

New planers, milling machines, shapers and drills all emphasize the stronger type of construction. Planer columns are more massive and support heavier crossrails. Open-side planers in particular have been given additional strength to provide the highest degree of rigidity. One such machine utilizes a triangular column to withstand severe twisting strains and is equipped with a spring counterbalance to offset the overhung weight of the knee and to keep the knee and rail snug. Practically all of the new planers are built with double length beds to eliminate table overhang.

In milling machines the principal strengthening has been done in the column, knee and overarm. It is common practice now to design millers with a broad base to enclose the motor drive. The several shapers announced during the year are notable for their heavier rams, wider frame fronts, more massive crossrails and larger bull gears placed closer to the ram. The latter feature increases the strength

Annual Digest of Machine Tools

CONTINUING a policy adopted in February, 1924, IRON TRADE REVIEW *has devoted an average of over six and one-half pages in the first issue of each month to a digest which analyzes and describes new machine tools. In this manner the principal features of each month's developments in design and construction and important problems of the machine tool manufacturing and consuming industries have been reviewed briefly. In this connection, the machines, small tools and auxiliary shop equipment announced to the trade during the preceding 30 days have been illustrated and described at sufficient length to provide busy executives with pertinent information regarding each tool without burdening them with unnecessary detail.*

The following is a recapitulation of the machine tools and other equipment developed for machine shop use and described in the twelve monthly digests in 1925. It does not include nearly 150 items which have applications in other than machine shops. The list for the first half of the year appeared in the June 4 issue and an index covering the last half, excepting December, was published in the Dec. 3 issue.

BORING AND REAMING MACHINES

No.	Machine	Manufacturer	Issue	Page
12.	Boring and drilling machine	Baker Bros., Inc.	1/8,	166
65.	Jig boring machine	Pratt & Whitney Co.	4/2,	883
79.	Boring and turning mill	Defiance Machine Works	4/2,	922
83.	Heavy-duty boring mill	Cincinnati Planer Co.	5/7,	1194
85.	Boring and reaming mill	Hoefer Mfg. Co.	5/7,	1195
105.	Reaming and honing machine	Barnes Drill Co.	6/4,	1456
132.	Boring and reaming machine	Pratt & Whitney Co.	7/2,	12
151.	Boring and drilling machine	Baker Bros., Inc.	8/6,	313
156.	Portable reaming machine	Chicago Pneumatic Tool Co.	8/6,	347
228.	Jig boring machine	Societe Genevoise d'Instruments de Physique	12/3,	1435

DRILLING MACHINES

No.	Machine	Manufacturer	Issue	Page
82.	Gang drill	Barnes Drill Co.	5/7,	1194
88.	Multiple spindle drill and tapper	Fox Machine Co.	5/7,	1196
104.	Multiple spindle drill	Defiance Machine Works	6/4,	1456
139.	Drilling and tapping machine	Luehrs Co.	7/2,	46
192.	Drilling and boring machine	Ryerson Joseph T., & Son Co.	10/1,	682

DRILLS, Portable

No.	Machine	Manufacturer	Issue	Page
103.	Air motor drill	Ingersoll-Rand Co.	5/7,	1236
117.	Electric motor drill	Hisey-Wolf Machine Co.	6/4,	1491
148.	Air motor drill	Ingersoll-Rand Co.	7/2,	48
223.	Electric motor drill	Hisey-Wolf Machine Co.	11/5,	1196

GRINDING MACHINES

No.	Machine	Manufacturer	Issue	Page
10.	Surface and disk grinder	Gardner Machine Co.	1/8,	166
13.	Surface grinder	Badger Tool Co.	1/8,	167
44.	Polishing lathe	Gardner Machine Co.	3/5,	633
45.	Horizontal grinder	Mitchell Engineering Co.	3/5,	633
63.	Brake drum grinder	Landis Tool Co.	4/2,	882
64.	Centerless grinder	Detroit Machine Tool Co.	4/2,	883
76.	Toolroom grinder	Oesterlein Machine Co.	4/2,	922
86.	Castings grinder	Blount, J. G., Co.	5/7,	1195
94.	Constant speed grinder	United States Electric Tool Co.	5/7,	1234
106.	Castings grinder	Ransom Mfg. Co.	6/4,	1457
108.	Horizontal grinder	Norton Co.	6/4,	1457
111.	Castings grinder	Clizbe Bros. Mfg. Co.	6/4,	1458
142.	Grinding and polishing machine	Excelsior Tool & Machine Co.	7/2,	46
143.	Castings grinder	Cleveland Stone Co.	7/2,	47
157.	Roll grinder	Landis Tool Co.	8/6,	347

(Concluded on Next Page)

of the power arm and lessens strains on the main lever. Wider vees increase the bearing of the ram and provide greater rigidity under severe duty. The main improvement in drilling machines is the stiffening of the column and table knee.

Due to the more sturdy construction of present day machines, the use of higher power has been made possible. The more general use of the direct drive has been a contributing factor to this development, inasmuch as a good deal of the gear train is eliminated. Despite the relatively greater cost of individual motor driven units, this type of drive continues to gain in its popularity. Equipment now is designed so that the motor can be placed close to the driven part, a feature which minimizes gearing and increases efficiency. Although motors sometimes are placed on the base of the machine, it is more common to conceal them in the base, mount them on the rear of the column, in the case of lathes to mount them on top of the head and in the case of drills to place them on the spindle head.

In connection with the popularity of motor drives, a wider use of the unit drive method is to be noted. It has been found advantageous to place several motors on some of the heavier type machines so that the various units can be operated independently of the others. Planers provide good examples of unit drive application. One large special lathe built during the year is equipped with a grinding machine and employs a total of eight electric motors.

Centralization of control, perhaps, is the most visible improvement to be incorporated in tools of the 1925 model. Because of its number of movements, the planer offers the most striking example of centralization. It is now common practice to group all levers at the operator's station, so that after a job is started it is unnecessary for the operator to move about in controlling the machine. The crossrail is a self-contained unit carrying all the mechanism necessary for power rapid traverse of the heads vertically and horizontally, as well as elevating or lowering the crossrail. These various movements now are controlled by one lever. Disengaging the elevating or lowering mechanism clamps the crossrail automatically and makes a separate operation for this purpose unnecessary.

Starting and stopping of the machine generally is accomplished by pushbuttons of the remote control type. One manufacturer, however, has gone a step farther and devised a master switch which hangs suspended over the planer table. This switch controls five operations; stopping, inching the table back and forth, controlling elevation or depression of crossrail, and starting the table and automatic feed.

The machine tool industry has been somewhat hesitant in accepting the

(*Concluded on Page* 48)

Annual Digest of Machine Tools (Concluded)

(Concluded from Preceding Page)

No.	Machine	Manufacturer	Issue	Page
167.	Horizontal grinder	Hisey-Wolf Machine Co.	8/6,	349
185.	Belt grinder and sander	Porter-Cable Machine Co.	10/1,	830
191.	Screw thread grinder	Societe Genevoise d' Instruments de Physique	10/1,	832
193.	Drill grinder	Oliver Instrument Co.	10/1,	832
211.	Surface grinder	Wilmarth & Morman Co.	11/5,	1156
231.	Internal grinder	Greenfield Tap & Die Corp.	12/3,	1436

GRINDERS, Bench and Portable

33.	Swing frame grinder	Farrell-Cheek Steel Foundry Co.	2/5,	426
36.	Portable air grinder	Warner & Swasey Co.	2/5,	427
47.	Electric bench grinder	Hisey-Wolf Machine Co.	3/5,	670
124.	Flexible shaft grinder	Carborundum Co.	6/4,	1493
168.	Portable electric grinder	Chicago Pneumatic Tool Co.	8/6,	349
220.	Bench air grinder	Ex-Cell-O Tool & Mfg. Co.	11/5,	1194

LATHES, Automatic, Engine and Turret

1.	Bolt threading machine	Holmes Engineering Co.	1/3,	164
23.	Four-spindle automatic	Bullard Machine Tool Co.	2/5,	424
66.	Bar turning lathe	Brightman Bros. Co.	4/2,	919
77.	Combination lathe	Krause, Ernst, & Co.	4/2,	922
87.	Crankshaft lathe	Niles-Bement-Pond Co.	5/7,	1195
95.	Cap screw lathe	Kent Machine Co.	5/7,	1234
107.	Car wheel lathe	Niles-Bement-Pond Co.	6/4,	1457
112.	Lathe and grinder	Niles-Bement-Pond Co.	6/4,	1490
115.	Geared-head lathe	Chard Lathe Co.	6/4,	1491
150.	Back-geared lathe	Pratt & Whitney Co.	8/6,	813
175.	Thread cutting lathe	Landis Machine Co.	9/3,	566
208.	Gear turning lathe	Consolidated Machine Tool Corp.	11/5,	1155
214.	Nut threading lathe attachment	Automatic Nut-Thread Corp.	11/5,	1193

MILLING MACHINES

9.	Universal milling machine	Kearney & Trecker Corp.	1/3,	166
43.	Two-spindle milling machine	Kearney & Trecker Corp.	3/5,	632
152.	Thread milling machine	Pratt & Whitney Co.	8/6,	813
170.	Universal milling machine	Cincinnati Milling Machine Co.	9/3,	564
174.	Universal milling machine	Kearney & Trecker Corp.	9/3,	566
176.	Universal milling machine	Cincinnati Milling Machine Co.	9/3,	566

PLANERS

4.	Double-column planer	Liberty Machine Tool Co.	1/3,	164
26.	Locomotive guide planer	Consolidated Machine Tool Corp.	2/5,	424
59.	Double-column planer	Cincinnati Planer Co.	4/2,	881
89.	Reversing planer drive	Niles-Bement-Pond Co.	5/7,	1196
131.	Open-side planer	Liberty Machine Tool Co.	7/2,	12
183.	Double-column planer	Cincinnati Planer Co.	10/1,	829
184.	Open-side planer	Gray, G. A., Co.	10/1,	829
205.	Double-column planer	Niles-Bement-Pond Co.	11/5,	1154
206.	Open-side planer	Cincinnati Planer Co.	11/5,	1154

SAWS

17.	Metal band saw	Racine Tool & Machine Co.	2/5,	390
60.	Circular cold saw	Hunter Saw & Machine Co.	4/2,	881
149.	Circular cold saw	Ryerson, Joseph T., & Son	8/6,	313
188.	Combination cold saw	Cochrane-Bly Co.	10/1,	830
195.	Automatic cut-off saw	Cochrane-Bly Co.	10/1,	833
230.	Power hacksaw	Peerless Machine Co.	12/3,	1436
234.	High speed metal saw	Peerless Machine Co.	12/3,	1437

SHAPERS

110.	Locomotive shaper	Cincinnati Shaper Co.	6/4,	1458
168.	Constant speed shaper	Rockford Machine Tool Co.	9/3,	564
232.	Heavy duty shaper	Gould & Eberhardt	12/3,	1436

SMALL TOOLS

6.	Quick change chuck	Procunier, William L.	1/3,	165
25.	Steady rest	Porter-Cable Machine Co.	2/5,	424
32.	Cutting tools	Altoona Tool & Industrial Equipment Co.	2/5,	426
37.	Tapping attachment	Procunier, William L.	2/5,	427
69.	Rotary die head	Geometric Tool Co.	4/2,	919
99.	Universal milling attachment	Porter-Cable Machine Co.	5/7,	1235
118.	Indexing table	Pratt & Whitney Co.	6/4,	1491
122.	Power chuck	Bullard Machine Tool Co.	6/4,	1492
145.	Drill speeder	Hoefer Mfg. Co., Inc.	7/2,	48
162.	Plug and ring gages	Haynes Stellite Co.	8/6,	349
180.	Power reamer	Blettner, George H., Co.	9/3,	567
199.	Thread cutting die head	Landis Machine Co.	10/1,	861

MISCELLANEOUS

27.	Dividing machine	Societe Genevoise d' Instruments de Physique	2/5,	425
210.	Gear generator	Farrell Foundry & Machine Co.	11/5,	1155
229.	Die sinker	Pratt & Whitney Co.	12/3,	1435

Business May Expect Better Deal From New Congress

By F. B. Pletcher
Washington Correspondent

THIS year promises to be a stable twelve-month for the business and industrial world, as far as the political and administrative panorama in Washington promises to unfold. The present session of congress is to be a writing of records for each party, records that must stand or fall in the tribunal of the electorate next November in the congressional elections.

Every seat in the house and 33 of those in the senate will be involved. The Republicans have comfortable majorities in both houses, and their fight will be not only to retain them but to strengthen their hold.

Upon the outcome of this session of the sixty-ninth congress, therefore, rests the fate of the last two years of the term of President Coolidge, and the prospects for American business and industry in the four years that are to follow 1928. It will be the undisguised motive of the Democrats, with the aid of the Republican irregulars and that narrow fringe of uncertain Republican regulars, to bring the Coolidge administration and the Republican party into as much disrepute as possible before next autumn's elections.

Already the cry has resounded on Capitol Hill that the present administration carries on it the stamp of the "interests." Business will be assailed even more by the politicians this year. But these attacks will not be heavy-freighted with consequence to business itself.

The truth is that public opinion has undergone a remarkable shifting in the last year or two. Since congress last met, two radical figures of the senate, LaFollette, of Wisconsin, and Ladd, of North Dakota, have departed from the political arena forever. Almost coincident with their passing has come a shifting of views. To some extent also has departed their attitude of watchful suspicion toward the material and economic forces that go to make up legitimate, organized business and industry, and the passionate desires to restrain business and to keep it tremblingly subordinate.

Business Welfare Considered

The public now concerns itself little with the industry that operates on the basis of large combinations or with the retail chain distributer, if such means greater unit production, lighter overhead and cheaper products to the buyer.

No longer are the welfare and interests of business entirely excluded from the temple of political sanctity and regard. To facilitate the production of material goods and the distribution of them among the people is viewed as tending to the enrichment of the average man. The President, in a recent address, promised that the government would be the vigilant supporter and friend of true business.

The country is seen by political soothsayers as being in a different frame of mind, with its standard of living the best in the world and a condition of prosperity existing such as no other country enjoys. Only certain agricultural districts in the West are restive. The disposition of Republicans who will join in the attacks of the Democrats will be to take advantage of some of the sectional discontent over some of the administration policies, particularly water-power development, agriculture, reclamation, irrigation and the shipping question. The West and the Pacific Coast will be heard from in these matters. It will be the business of such Republican senators as Stanfield, of Oregon, Jones, of Washington, Shortridge, of California, Oddie, of Nevada, Cameron, of Arizona, and Gooding, of Idaho, who are striving to be re-elected to try to placate these sectional discontents. Their course, therefore, may be somewhat uncertain.

Other of the Republican wheelhorses will be forced to go on the political stump to retain their places. These include Senator William M. Butler, the President's chief spokesman in the senate; Curtis, of Kansas, the majority leader; Watson, of Indiana, assistant floor leader; Moses, of New Hampshire, president *pro-tempore;* Smoot, of Utah; Wadsworth, of New York; Pepper, of Pennsylvania; Cummins, conservative of Iowa, and Bingham, of Connecticut, all Republican regulars and men who would be missed as friends of business if they were defeated.

Today we have the spectacle of the leading "controls" of congress actually urging consolidations of railroad systems, so that equalization of earnings between strong and weak roads may be accomplished more readily.

Furthermore, President Coolidge in his message to congress urged such consolidations, with the view of better economics. How the LaFollettes would have stampeded and roared in the old days at the mere mention of consolidations of business groups being authorized by statute! Such a suggestion in either legislative chamber would have been sacrilege. Today such expression from the President is greeted with equanimity of spirit.

The lodestone of responsibility the Republican leaders are called upon to exercise consists of holding 56 Republican senators with such tolerant adroitness so as to be able to deliver 49 of them on crucial roll calls. Fifty-six is the total number of Republican senators, regular and nominal, and 49 is the number required to make a majority. On paper this margin seems to give the Republicans a safe majority. But that margin of seven is more than consumed by the Republican senators who are little more than Republicans in name. The leaders know that more than seven hardly can be counted upon for consistent support.

Republicans Have Narrow Margin

Those senators making up the radical group are Norris, of Nebraska, the solicitous friend of the Middle West farmer; Brookhart, of Iowa, who has just gone through a contest to determine the validity of his senatorial seat; Frazier, of North Dakota; Robert LaFollette, of Wisconsin, who is too new to the senate to solidify much of a following; Nye, of North Dakota, who succeeds former Senator Ladd, not to mention Borah, of Idaho, of powerful influence; Norbeck and McMaster, radicals from South Dakota; and the recalcitrant Couzens, of Michigan.

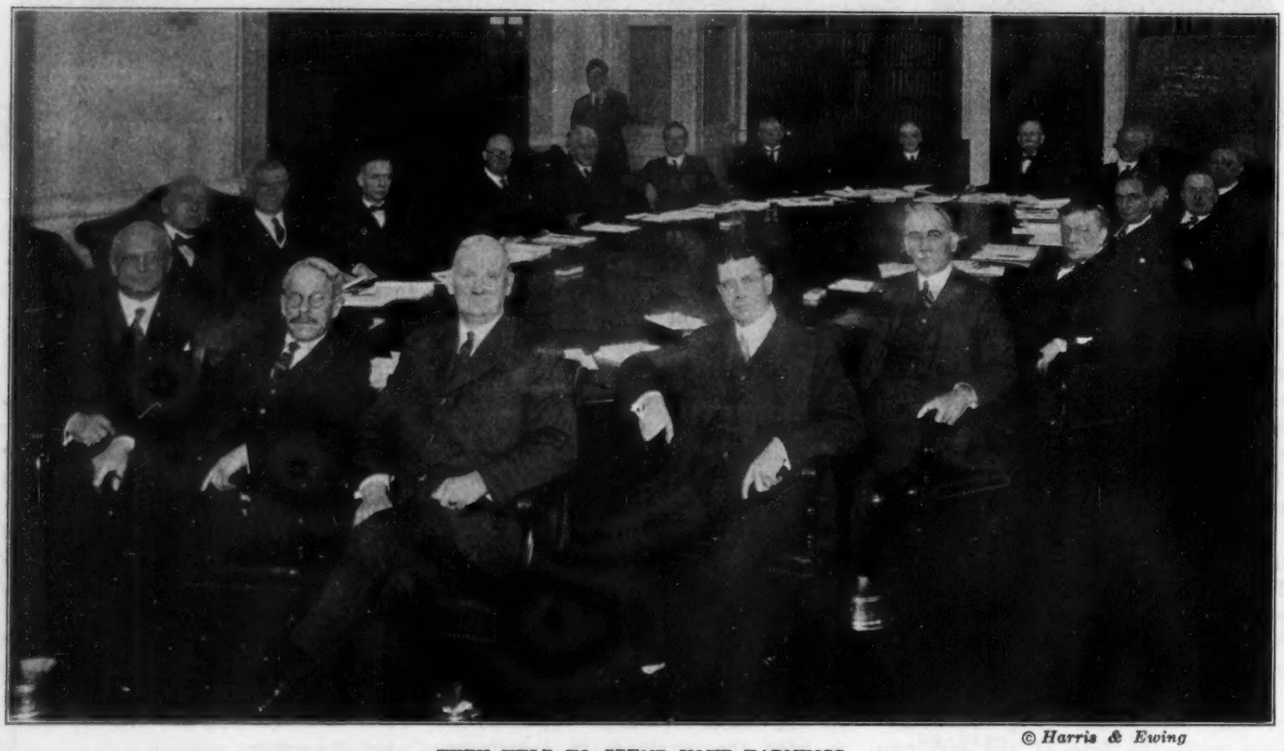
With such a narrow margin, the Republican leaders have been hardly in position to read anybody out of the party. It was considered a doubtful procedure even under the leadership of the late Senator Lodge, of Massachusetts. It was less consistent with the shrewd temperament of the present Republican leader, Senator Curtis of Kansas. So the olive branch was offered to the left-wings after the unexpected technical questioning concerning the manner of their election and appointment.

The Democrats have no actual responsibility. Their function will be that of picking the mote from the eyes of their adversaries. Political maneuvers, flanked by the clash of scandal investigating committees on all sides, will delay the work of congress. The committees are working to revive the oil scandals, to renew their attempts to oust Secretary of the Navy Wilbur from the cabinet, and to attack the policies of Secretary of the Interior Work. It appears that the session will extend to midsummer. Members, especially those facing political campaigns, will not be loath to see the session prolonged, consistent with the primary dates. The senate and house in the past have furnished a ready forum for political campaigns broadcast from Capitol Hill, a forum that has no counterpart.

What Business Wants

Business wants to see the tax burden reduced by at least $300,000,000 yearly; appropriations kept within the limits of a frugal budget; one-man control of the Emergency Fleet Corp., with something like a sane policy for administering the government merchant fleet; little or no tinkering with the tariff law; ratification of war debt funding settlements; some sort of sound substitute for the McNary-Haugen agricultural price fixing bill; final clearing away of the Muscle Shoals question; adequate rivers and harbors appropriations, particularly in the way of a constructive program for completion of the inland waterways system, and as short a session as is possible to make it.

Steps being taken at present and those planned for the remainder of the year by the government toward increasing national efficiency and elimination of waste in industry on a national scale are of the broadest



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THEY HELP TO SPEND YOUR EARNINGS

Members of the House Ways and Means Committee, Considering Income Tax Reductions. The Net Profits of Manufacturing Industries as a Whole in 1923 Aggregated About $3,500,000,000, Approximately What Will Be Required To Run the Federal Government During the Coming Fiscal Year

nature. Secretary of Commerce Hoover believes that, due to the elimination of national waste and similar contributing factors, the United States is able to show since the war one of the most remarkable transformations in all economic history. The country has had three years of remarkable price stability in industrial and business lines. The alternating boom and slump periods, the perverse effect of which have contributed to an uneven movement of the business cargo, have been placed under control by business itself. Linked with the government's unrelenting campaign on industrial waste has been a development in the last year or more of a transportation service by the railroads which has been unexcelled in history. Today the railroads present a picture of facility to cope with the hardest traffic problems. This latter situation is revolutionizing the country's distribution system.

The flow of commodities from point of production or fabrication to consumer has increased in every community, large and small. Lower inventories everywhere have become the accepted thing.

Secretary Hoover believes that the present high standard of living in the United States, as against those of the nations overseas, is the steady result of growing per capita productivity. The present campaign for better nationwide utilization of materials and motion is similar to the movement 20 years ago toward nationwide conservation of the country's natural resources.

To this end some 900 group conferences have been held with the department of commerce, practically all at the request of industries themselves, since the work was launched on a large scale in 1921, and about 230 committees now are at work on phases of the program.

An illustration of an epochal development in the attitude of other branches of the government toward business is set forth in the report of the work of the antitrust division of the department of justice in the last year.

This was prepared by Assistant Attorney General William J. Donovan July 1. "The policy of the government is to confine its activities," Mr. Donovan says, "to cases involving serious violations of the law and to avoid so far as possible investigating unsubstantial complaints. Upwards of 50 investigations have been marked 'closed' within the last six months because the complaints showed clearly that no violation of the law was involved. This does not

© National Photo

WILLIAM HENRY McMASTER (left) and PETER NORBECK, senators from South Dakota, are Republican members of the insurgent group. Norbeck, a well-driller by occupation, formerly was governor of South Dakota, and was a member of the former farm bloc of the senate. He must face a contest for re-election this year, his present term expiring March 4, 1927. McMaster is a native of Iowa and is a graduate of Beloit college, Beloit, Wis.

Senator McMaster is in the banking business, and also has been governor of South Dakota.

Year's Chronology of Business Affairs at Washington

Jan. 14 and 15—First national conference on distribution held in Washington.

Jan. 15—Announcement made of $150,000,000 in refunds to industrial companies authorized by congress in urgent deficiency bill on taxes erroneously collected.

Feb. 3—Child labor amendment meets rejection in large number of state legislatures to date.

Feb. 14—New business arbitration law signed by President Coolidge; became effective Jan. 1, 1926.

March 4—Sixty-eighth congress passes out of existence, leaving mass of controversial business unfinished.

March 15—Action sought under flexible provisions of tariff law and antidumping act to check exports of European steel and pig iron to United States.

April 6—Complaint of federal trade commission against Pacific coast steel scrap buyers is dismissed.

May 22—Federal trade commission adopts new regulations giving concerns and individuals chance to be heard before complaints against them are made public.

June 1—United States Supreme Court decision sanctions collection and dissemination of legitimate business statistics by trade associations.

June 13—Natonal Association of Manufacturers plans to ask congress for larger inflow of aliens in cases of labor shortage.

July 1—Assistant Attorney General Donovan reports policy of government in antitrust cases is to avoid as much as possible investigation upon unsubstantial complaints.

Nov. 23—Henry G. Dalton, of Pickands, Mather & Co., Cleveland, urges reorganization of government shipping bureaucracies at Washington in report as special investigator for President Coolidge.

Nov. 23—Claire Furnace Co. case re-argued before United States Supreme Court.

Dec. 4—Bethlehem merger hearings adjourn for indefinite period following intermittent hearings throughout year.

Dec. 11—National Rivers and Harbors congress urges speed in national program to develop waterway trade routes.

Dec. 11—Representatives of trade associations and individual concerns form permanent organization in Washington to combat government interference in business fields.

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GERALD P. NYE, 33-year-old Non-Partisan leaguer, appointed by Governor Sorlie of North Dakota, to fill the vacancy caused by the death of Senator Edwin F. Ladd, the late insurgent, went through a battle to retain his seat when the senate passed on the legality of his appointment. Nye is editor of a country newspaper. He supported the LaFollette ticket. LYNN J. FRAZIER, farmer-politician, also a Non-Partisan leaguer, has been elected governor of North Dakota several times under the Republican banner.

He was then endorsed by the Non-Partisan league for senator from South Dakota, nominated on the Republican ticket and elected as a Republican in 1922.

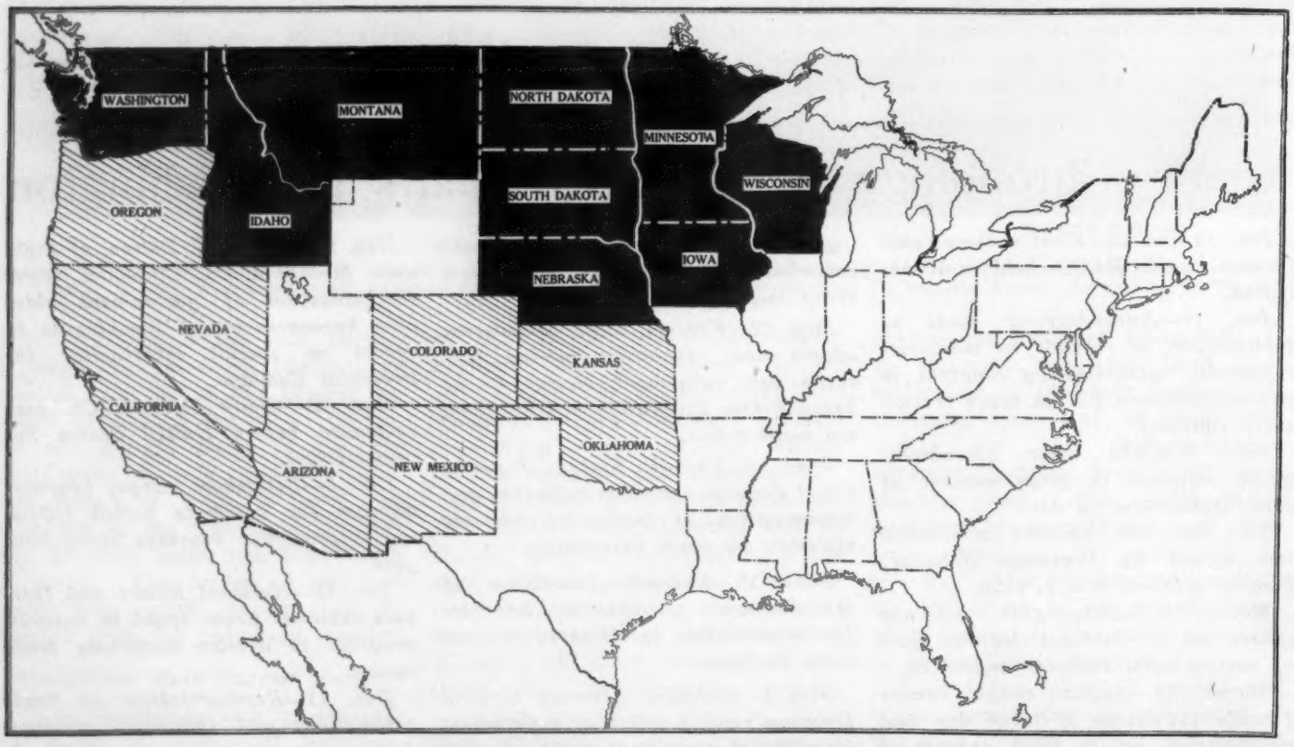
mean that there will be any decrease of effectiveness in the enforcement of the law. On the contrary, it means that substantial complaints will be investigated and violations prosecuted with greater effect, inasmuch as time and effort will not be diverted to the pursuit of futile investigations of unfounded complaints."

Since the Supreme Court defined the powers of trade associations before adjournment last summer, in the cement and maple flooring cases, the way has been cleared for these associations to gather and disseminate information on prices, production costs, stocks and shipments. It is said that many trade groups have a tendency to go too far under these decisions, and are in danger of being charged with illegal maintenance of prices and suppression of free competition. This condition should be restrained within the trade association groups themselves. No legislation is needed.

Judged by universal and all practical interest, the question of paring down the tax bill of the country heads the long congressional catalog of things that the people of the country want done this year. Federal, state and local taxation in recent years has become so serious an item in the budgets of little and big taxpayers alike that legislation to reduce the government's total levy is being followed with unflagging interest by the public.

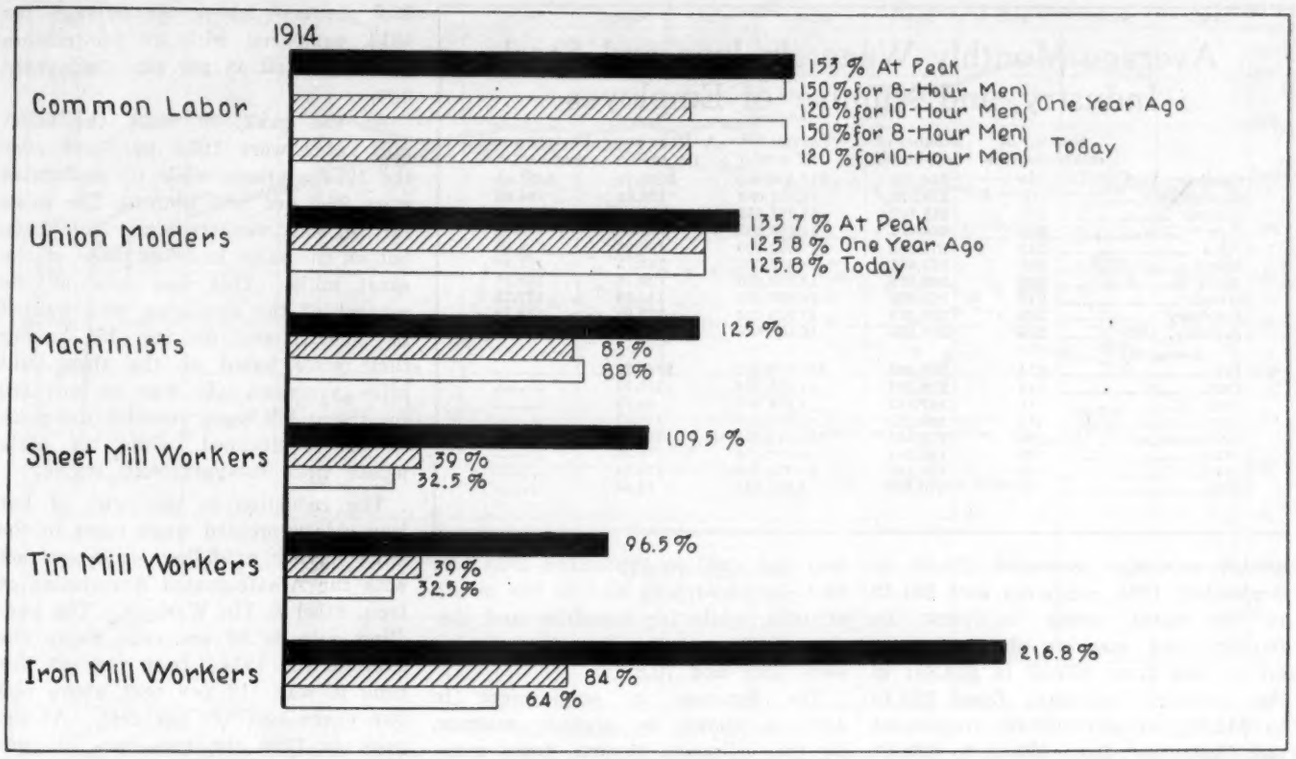
Inspired by the widespread principles of economy, made a definite feature of the government activities by President Coolidge, the country has become temperamentally more frugal, particularly in its view of government expenditures. The important contest in congress concerning the lopping off of taxes has been concerning the practicability of making an even greater reduction in the yearly amounts paid into the treasury by groups, occupational and excise classifications. The bill as passed the house calls for reducing

(*Concluded on Page* 116)



THE POLITICAL COMPLEXION OF THE STATES

One or both senators of the states shown in solid black are radical, or of radical tendency. Shaded states show where Republican regulars must placate constituents, with congressional elections approaching, because of the sectional discontent arising from agricultural conditions, policies concerning reclamation, irrigation, water power development and the shipping question. Eastern portion shows general contentment with economic situation, and southern states represent sectional or political differences



WAGE ADVANCES EXPRESSED IN PERCENTAGES OVER 1914, WHEN WAGES WERE AT THE PEAK IN 1920, A YEAR AGO, AND AS THEY ARE TODAY

Greater Earnings, 1925 Record for Labor

Increase in Employment, With Wage Rate Remaining at High Levels, Benefits Industrial Workers

BASIC wage rates are not materially altered from their levels of a year ago, but increasing employment has added in substantial manner to earnings. This is nowhere more noticeable than in the record of the iron and steel industry, where payrolls have been greatly enlarged during a period when rates have remained practically stationary.

It is apparent that commodity prices continue to be deflated more rapidly than wage rates, this circumstance adding to "real" wages. The year 1925 was one of the most prosperous periods in history for American workmen. Furthermore, there is nothing in prospect to indicate a change in this situation, at least in the iron and steel industry, for some months.

The report of the iron and steel group to the government for October shows an increase of 8 per cent in employment over a year ago, and an advance of 13 per cent in the amount paid out as wages, over October, 1924.

The United States Steel Corp. has not changed its labor rates, and the independent companies employing the great majority of workmen in the industry outside of that organization, have held to theirs. Only two large companies in 1925, so far as known, reduced wage rates, and one of these restricted the cut to its coal department. The reduction of 10 per cent made by the other did not affect more than 2000 employes.

Wage rates in the principal branches of the iron and steel industry are unchanged from a year ago. This includes the foundry workers, whose rates still are 126 per cent above the average of 1914. Rates in the machine shops are slightly higher than a year ago, for certain lines requiring special skill.

The only department in which wage reductions are noted particularly are in the sheet, tin plate and bar iron mills, where compensation is based on selling prices of the products. No changes were made in the basic rates when the contracts were renewed by the mills in 1923.

The general average of wage rates in the iron and steel industry excluding the sheet, tin plate and bar mills, is 140 per cent over 1914. The average cost of living among American wage earners is 70 per cent over 1914.

How increased employment in 25 basic industries gave the workers more money in 1925 is illustrated by a report of the National Industrial Conference board. In September 1925 the weekly earnings in these industries averaged $26.94 compared with $25.98 in September, 1924, in which month industry was beginning to recover from depression.

Employment in September 1925 was only 21 per cent below that of the base month, June 1920. In September 1924 employment was 28 per cent lower than that of the base month. The average work week in September 1925 was 48.3 hours, 1.9 hours more than in September, 1924.

The net result was an increase in the number of workers and an addition of $1 each week to the pay envelope of the average worker.

In the iron and steel industry

Average Monthly Wages in Iron and Steel Industry, and Number of Employes

	Number of establishments	Number of employes	Payroll for half month	Average wage per month	Average wage year previous
October, 1925	210	274,566	$18,636,682	$135.75	$128.42
September	208	270,813	16,688,083	123.24	124.42
August	197	265,752	17,251,663	129.83	127.92
July	206	230,174	14,460,203	125.66	109.12
June	219	270,260	17,032,900	126.05	115.12
May	219	281,951	18,936,205	134.75	132.30
April	203	288,679	18,733,669	129.79	130.42
March	217	282,005	18,989,823	134.68	137.73
February	212	290,279	17,720,032	122.09	129.19
January, 1925	216	287,155	19,494,615	135.78	128.00
Averages:					
1924	214	258,460	$16,386,057	$126.72	.....
1923	183	229,594	14,125,068	123.01	.....
1922	118	147,882	7,378,535	98.78	.....
1921	114	117,223	5,869,438	100.12	.....
1920	105	172,318	13,015,883	151.06	.....
1919	105	154,244	9,989,098	128.22	.....
1918	97	180,859	10,734,114	118.74	.....
1917	97	180,088	8,327,492	92.49	.....

weekly earnings averaged $34.56 in September, 1925, compared with $31.79 in the same month in 1924. In foundry and machine shops the increase was from $27.53 to $28.38; in the motorcar industry, from $28.49 to $32.50; in agricultural implement manufacturing, from $26.93 to $29.20, and in electrical manufacturing industry, from $26.80 to $28.12.

In the same period the average weekly hours of work increased from 49.3 to 54.9 in the iron and steel industry; from 46.4 to 48.3 in the foundries and machine shops; from 43.8 to 46.8 in motorcar manufacturing plants; 46.7 to 49.2 in agricultural implement lines, and from 45.3 to 48.2 in electrical manufacturing.

As regards to employment, the greatest percentage of gain was shown in agricultural implement manufacturing. The index number in this case was 70.3 in September, 1925, compared with 48.9 in September 1924. June 1920 is the base month representing 100. Automobile manufacturing showed almost as large a gain in employment. The index number for iron and steel in September 1925 was 68.2 compared with 61.7 in the month of 1924, while for foundries and machine shops, the comparative figures were 73.6 and 70.9.

The increase in employment in 1925 is shown in another manner, by the collective reports from members of the National Metal Trades association. In November, 1925 the total number employed was 636,151, compared with 481,699 in November, 1924. A steady gain was reported through most of the months of 1925, although there was a slight decrease, from 637,160 to 636,151, from October to November. The November figures include 31 shops, three more than in the prior reports.

Average weekly earnings in September for 617,768 employes reported by members of the National Metal Trades association were $26.94, compared with $26.49, the average for 584,965 employes in June.

Wages that are based on selling prices in the sheet, tin plate and bar iron mills are below those of a year ago. Sheet and tin plate mill rates are 32.5 per cent above the average for 1914, compared with 39 per cent a year ago, and 48 per cent two years ago.

At the peak, in 1920, the sheet mill rates were 109.5 per cent over the 1914 average, while tin mill rates were 96.5 per cent above. The rates for tin mill workers since have been put on the same basis as those of the sheet mills. This was done at the request of the employes, who wanted to benefit, and did so, by having their scale based on the sheet mill price averages. It was an advance for them; but more recently the price of sheets dropped, while tin plate prices were comparatively stable.

The reduction in the price of bar iron also depressed wage rates in the mills having a sliding scale contract with the Amalgamated Association of Iron, Steel & Tin Workers. The puddling rate is 90 per cent above the average for 1914. Last year at this time it was 112 per cent above and two years ago, 139 per cent. At the peak in 1920 the rate was 235 per cent over the 1914 average. What this means in money to the puddlers is expressed as follows: The amount paid per ton for puddling in 1914 averaged $5.60; at the peak, $18.76; two years ago, $13.13; one year ago, $12.13; and today, for the November-December 1925 period, $11.13.

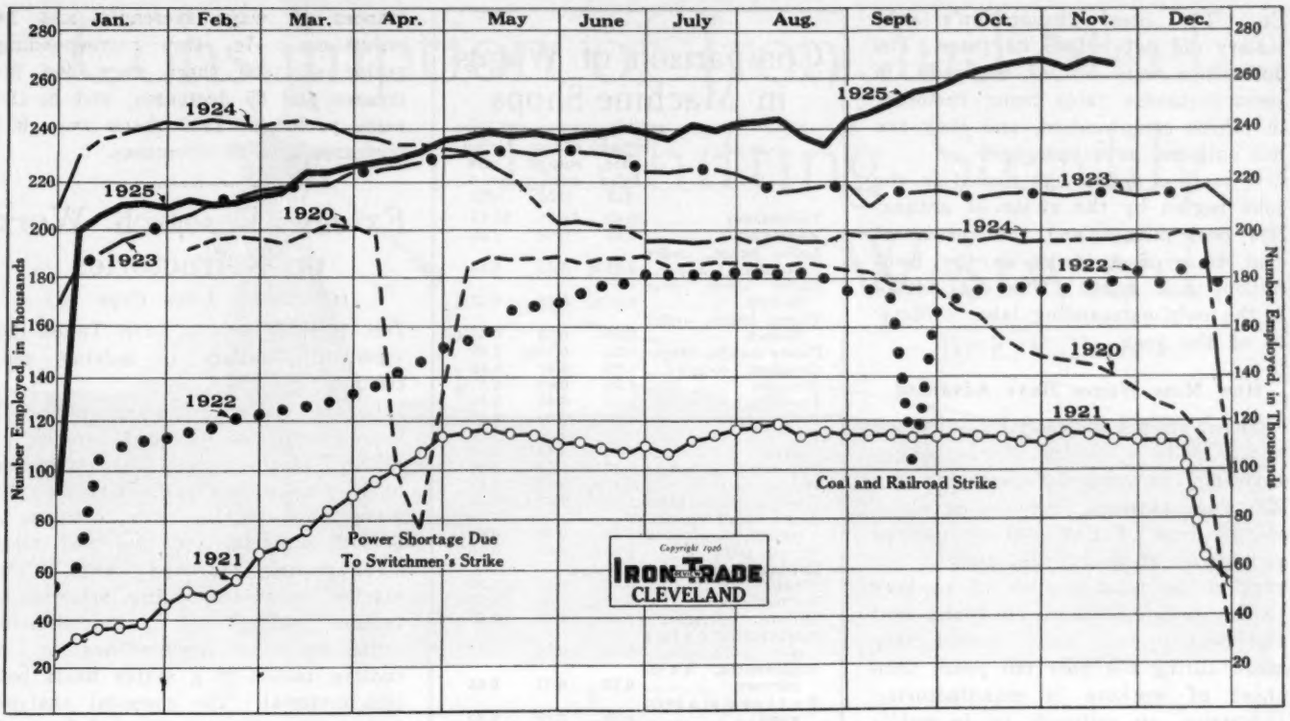
The general average for bar mill workers' wages is 64 per cent above 1914, compared with 84 per cent above, a year ago; 108 per cent above, two years ago, and 216.8 per cent above, when the wages were at their highest point.

The general average of wage rates for machinists is slightly above that of a year ago, while there were practically no changes in 1924. In some of the skilled lines there was a better demand for men, and this is reflected in an increase in rates in certain cities for toolmakers. The hiring rate for toolmakers today in Cleveland is 75 cents an hour compared with 72 cents a year ago. The year 1925 was another period of peaceful labor relations in the metal trades and work was fairly plentiful.

The Employers Association of Detroit compiles charts showing hiring rates of all-around machinists, and also of common labor, in general manufacturing, in 41 cities. These afford a basis for some comparisons. In 15 cities during the past year there were increases in maximum rates for machinists, while in seven cities there were reductions in the maximum rates. In ten cities there were increases in the minimum rates,

Advance in Union Molders' Wage Rates

Rates prior to war, 1914	Postwar Peak	Rates Dec. 1, 1925
BOSTON:	$7.20 for 8 hours	$7.20 for 8 hours
$3.50 for 9 hours	131.9% over prewar	131.9% over prewar
CHICAGO:	$8.40 for 8 hours	$8.00 for 8 hours
$4.00 for 9 hours	136.4% over prewar	125.2% over prewar
CINCINNATI:	$7.00 for 8 hours	$7.00 for 8 hours
$3.50 for 9 hours	125.5% over prewar	125.5% over prewar
DETROIT:	$8.50 for 8 hours	$7.20 for 8 hours
$3.50 for 9 hours	173.7% over prewar	131.9% over prewar
MINNEAPOLIS:	$7.20 for 8 hours	$6.16 for 8 hours
$3.50 for 9 hours	131.9% over prewar	98.4% over prewar
NEW ORLEANS:	$7.20 for 8 hours	$6.00 for 8 hours
$3.25 for 9 hours	149.3% over prewar	109.7% over prewar
NEW YORK CITY:	$7.04 for 8 hours	$8.00 for 8 hours
$3.75 for 9 hours	111.5% over prewar	140.3% over prewar
PITTSBURGH:	$7.50 for 8 hours	$7.50 for 8 hours
$4.00 for 9 hours	111 % over prewar	111 % over prewar
ST. LOUIS:	$8.00 for 8 hours	$7.50 for 8 hours
$3.50 for 9 hours	157.7% over prewar	141.3% over prewar
CLEVELAND:	$7.20 for 8 hours	$7.20 for 8 hours
$3.50 for 9 hours	131.9% over prewar	131.9% over prewar
INDIANAPOLIS:	$7.20 for 8 hours	$7.00 for 8 hours
$3.50 for 9 hours	131.9% over prewar	125.5% over prewar



SIX YEARS OF EMPLOYMENT

This chart prepared by the Employers' Association of Detroit shows the number of persons employed by firms whose employing strength represents two-thirds of the total in the city and suburbs

while six cities show reductions.

The average of the maximum rates is 72.5 cents an hour compared with 70 cents a year ago. Minimum rates now average 61 cents, or one cent more than a year ago. These comparisons are based on rates in 40 cities as reported a year ago, and the same cities, with the addition of one other, or 41 in all, in the list as issued in December, 1925.

The latest reports from the same cities show an average of 43.5 cents an hour as the maximum for common labor, the same as a year ago. The average minimum is 38 cents, the same as a year ago.

Further, showing the stability of rates for common labor, the United States Steel Corp.'s are the same today as when announced in August, 1923, when the 12-hour day was abolished. The hourly rate for workers on 8-hour shifts is 50 cents, and for those on 10 hours 44 cents. The 10-hour workers receive 120 per cent more today than they did for the same length of time in 1915.

Averages compiled from reports made by more than 200 establishments in the iron and steel industry, including about 250,000 employes, clearly indicate an upward trend of wages, and these are important especially because they show the workers' actual income, as distinguished from rates.

The average amount paid to 274,566 employes on the payrolls of 210 companies in October, 1925, was $135.75. This figure is within 3 cents of the average for employes of 214 companies in January, 1925.

Between the two months there is a wide variation in wages, as the average dropped from $135.78 in January to $122.09 in February; increased to $134.68 in March; receded in April, recovered to $134.75 in June; went down to $123.24 in September, and advanced to $135.75 in October.

The trend is better indicated by a longer range of averages. For the first ten months of 1925 the figure was $129.76. This is higher than shown for any year since 1920. It is $3.04 above the monthly average for 1924.

Wage rates for union molders in 11 districts remain unchanged from a year ago. The general average is 125.8 per cent above 1914, compared to 135.7 per cent when they were at the peak. Rates have been unchanged practically for several years. In only two cities, Detroit and New Orleans, were there any changes in the preceding year, 1924; in Detroit an advance from $6 to $7.20 for eight hours; in New Orleans, an increase from $6 to $6.40 during the year, that was not supported, causing a return to $6 before Jan. 1, 1925. Although their rates have not been changed, an increase in work, hence earnings, places the molders in better position.

Some labor deflections occurred in the Connellsville coke region during the fall of the year, when certain operators attempted to reduce rates, and their men were attracted by those paid by the H. C. Frick Coke

Wage Rates in General Manufacturing

	All-around machinists hiring rate per hour, cents	Common labor, per hour, cents
Akron	75-85	35-40
Albany	65-75	40-50
Battle Creek	60-65	40
Boston	71½	44-47
Buffalo	60-70	40-50
Canton	62-72	40-45
Chicago	75-80	47
Cincinnati	60-75	38-50
Cleveland	75	45
Columbus	55-65	40
Dayton	65-70	40
Detroit	70-80	45-50
Erie	55-75	40-45
Flint	65-75	40
Fort Wayne	58-78	45-50
Grand Rapids	50-60	40
Hartford	57½-66	41-45
Indianapolis	45-75	30-35
Jackson	60-70	37½-45
Lansing	65-75	40-45
Louisville	65-75	35
Memphis	70-80	22-25
Milwaukee	60-70	40-45
Moline	60-70	30-40
Muskegon	56	41
Nashville	45-55	20-25
New York	65-75	45-53
Newark, N. J.	65-70	45-50
Philadelphia	60-75	35-45
Pittsburgh	55-85	40-50
Racine	45-72½	40-45
Richmond, Va.	65-75	30-37½
Rochester	70-80	50-52
Saginaw	62½-70	40-50
South Bend	55-70	30-40
Springfield, Mass.	60-75	40-50
St. Louis	60-75	35-40
Toledo	65-85	40-50
Toronto	50-55	30-35
Wilmington	65-75	35-45
Worcester	60-75	45-50

Figures compiled by Employers' Association of Detroit, as of Nov. 20, 1925.

Co. The Steel corporation's subsidiary did not reduce its rates. The difficulties were settled variously, in some instances rates being restored; in others compromised, and they are not uniform, as a year ago.

A restless spirit was caused in the coke region by the strike of anthracite coal miners and the threat at that time of a strike at the bituminous coal mines. The coal strike is the only outstanding labor difficulty of the year.

How Mine Wages Have Advanced

The National Industrial Conference board made a survey of the wages covering 140 collieries employing 96,226 wage earners, representing about 90 per cent of the total commercial production of anthracite, and 62 per cent of the total number of workers in the anthracite field. It found that the wages had risen considerably more during the past ten years than those of workers in manufacturing industries, on railroads or in public utilities. Average hourly earnings from June, 1914, to December, 1924, rose 192 per cent, while hourly wages in 25 basic manufacturing industries during the same period increased 129 per cent; hourly earnings of workers on Class 1 railroads 141 per cent; those of workers in illuminating gas plants 111 per cent, and in electric light and power establishments 121 per cent.

The average daily earnings, or earnings per "start" of contract miners did not show as large an increase for the ten-year period owing to the shortened working day. However, the gain here was 163 per cent. While other industrial wages as a whole decreased since 1920, the peak year, wages in the anthracite mines showed practically no recessions. The mine operators refused a further increase when the contract expired in August.

Railroad wages on an average were higher in 1925 than in any preceding year, except 1920 and 1921. The average earnings per hour per employe are 120 per cent greater than in 1916, and the average earnings per year per employe in 1925 were 83 per cent above 1916. The cost of living is only 55 per cent over what it was in 1916.

Another computation shows that the average hourly railroad wage of all employes now is 11 per cent greater than in 1919, while the cost of living is 13 per cent less than it was at the end of that year.

Wages More Stable

New demands for wage increases have been put forth by employes in the building trades in some of the large cities, but in general the tendency has been toward stability at the high levels previously attained. In the first ten months of 1925, in the building trades, there were 239 instances of wage increases and 14 reductions. In the corresponding period of 1924 there were 464 increases and 65 decreases, and in the same period in 1923 there were 856 increases and 64 decreases.

Comparison of Wages in Machine Shops

	Average hiring rate, Feb., 1915	Average hiring rate at peak, 1920	Average hiring rate Jan. 1, 1926
Toolmakers	$0.40	$0.79	$0.75
Machinists	0.35	0.72	0.60
Lathe hands, under 24-inch	0.32½	0.65	0.55
Lathe hands, over 24-inch	0.37½	0.61	0.62½
Planer hands, under 36-inch	0.30	0.72	0.57½
Planer hands, larger	0.35	0.70½	0.65
Grinders, rough	0.25	0.50	0.45
Scrapers	0.30	0.69	0.57½
Floor hands	0.35	0.65	0.60
Bench hands	0.30	0.62	0.50
Drill press, ordinary	0.25	0.54	0.50
Drill press, radial	0.30	0.59	0.55
Boring mill	0.37½	0.72	0.65
Screw machine, hand	0.25	0.55½	0.50
Screw machine, automatic	0.30	0.65	0.60
Turret lathe	0.32½	0.65	0.60
Milling machine, hand	0.25	0.56	0.50
Milling, plain	0.27½	0.63	0.55
Milling, universal	0.30	0.58	0.65
Blacksmiths, forgemen	0.30	0.70	0.64
Blacksmiths, hammermen	0.30	0.71	0.65
Patternmakers, wood	0.35	0.92	0.85
Helpers	0.25	0.54	0.47
Polishers	0.30	0.60	0.60
General labor	0.20	0.45	0.45

The foregoing averages while taken from the statistics in the Cleveland district are fairly representative of the averages in the largest districts of the country represented in the National Metal Trades association. The comparison is given to indicate the changes in wages applied to the more important classifications. In the majority of all reports, the minimum or maximum rates paid do not vary over 10 per cent from the above averages in Cleveland.

Wage Changes Based on Selling Prices

Amalgamated Association of Iron, Steel and Tin Workers' Scale

	Percentage advance—at peak over 1914	in Nov.-Dec. 1924 over 1914	in Nov.-Dec. 1925 over 1914
Sheet mill workers	109.5	39	32.5
Tin mill workers	96.5	39	32.5
Bar mill workers			
Puddling	235.0	112	90.0
Cinder bottom:			
Heavy scrap	271.0	103	73.0
Light scrap	253.0	96	91.0
Cast swarth	250.0	94	67.0
Sand bottom:			
Heavy scrap	212.0	72	58.0
Light scrap	271.0	112	73.0
Muck rolling	227.0	90	60.0
Piling on boards	138.0	51	39.0
Heating, bar mill	174.0	61	46.0
Heating, guide mill	137.0	52	40.5
Average, bar mill	216.8	84	64.0

Extend Research Work on Refractories

(*Concluded from Page* 25)

Jan. 1, 1925 issue of IRON TRADE REVIEW, also assists in solving roof troubles.

Several special refractory materials have shown progress and promise in 1925. The electrically fused magnesia oxide or periclase grain material has given good service when used as a bottom material for tool and alloy steel electric furnace work. The marked resistance of this material to bottom "puffing" and disintegration or crumbling under repeated heating and cooling makes it a stable basic bottom material. The chemical analysis and structural composition of the periclase grain, when sintered into place, closely approaches what has previously been termed a good and possibly ideal basic bottom. This material in its pure form has also produced fine results as an electrical insulating material for packing high temperature heating elements.

A synthetic mullite brick now is being successfully made on a commercial scale. In rotary enamel smelting furnace linings this material has demonstrated a service life of ten times that of a clay brick lining. Another service application has been made by finely pulverizing the material and mixing it up with a proper liquid solution and applying it to clay brick walls as a glazing wash.

Corporation's Rates for Common Labor

	Wages for 10 hrs.	Per cent advance	Per cent advance over 1915
1915	$2.00	....	....
Feb. 1, 1916	2.20	10	10
May 1, 1916	2.50	13.6	25
Dec. 15, 1916	2.75	10	37.5
May 1, 1917	3.00	9	50
Oct. 1, 1917	3.30	10	65
April 16, 1918	3.80	15	90
Aug. 1, 1918	4.20	10.5	110
†Oct. 1, 1918	4.62	10	131
†Feb. 1, 1920	5.06	10	153
†May 16, 1921	4.05	*20	102.5
July 16, 1921	3.70	*8.6	85
Aug. 29, 1921	3.00	*18.9	50
Sept. 1, 1922	3.60	20	80
April 16, 1923	4.00	11	100
††Aug., 1923	4.40	10	120

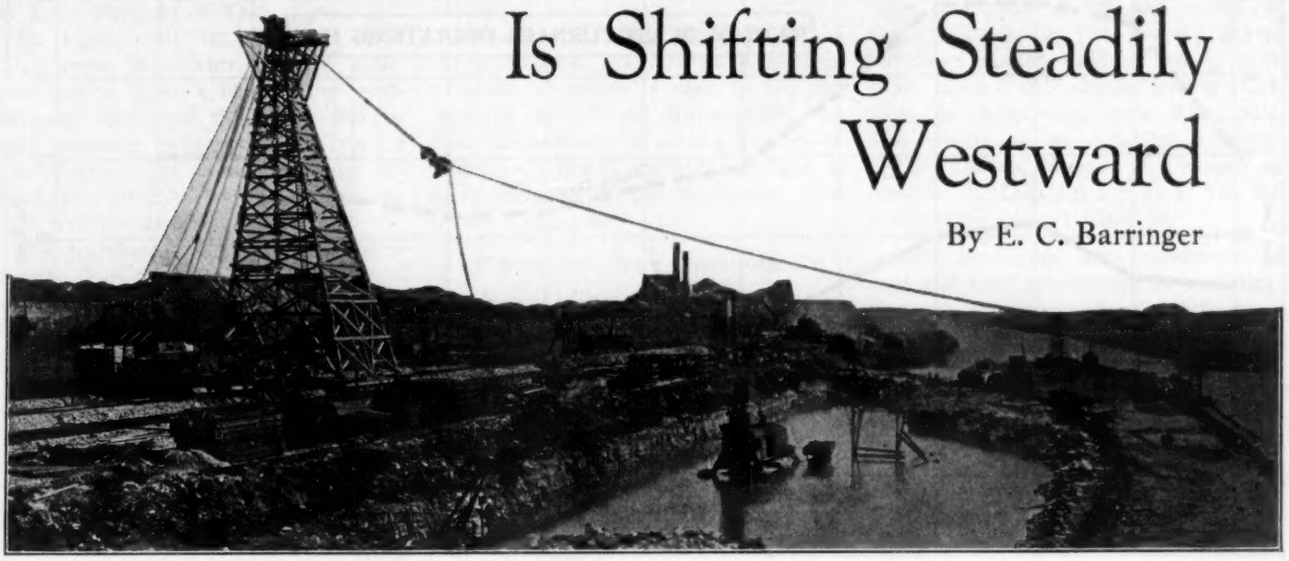
*Reduction.

†Basic 8-hour day in effect; time and one-half for overtime.

††Twelve-hour day abolished. Labor placed on 8-hour shift paid at rate of 50 cents an hour.

Consumption of Iron and Steel Is Shifting Steadily Westward

By E. C. Barringer



IN 1925 the Chicago district cast a lengthening shadow over the iron and steel industry of the United States. From the standpoint of production, and presumably also of consumption, it got away to a flying start as the year opened and remained the pacemaker.

Blast furnace activity in the Chicago district ranged from 13 to 31 per cent above the country's average. Not until mid-December did the rate of steel ingot production at either Pittsburgh or Youngstown exceed that of Chicago, and for the year as a whole the Chicago ingot rate topped that for the entire industry by about 5 per cent.

Most Furnaces in West

The only new blast furnace completed in 1925 was that of the Youngstown Sheet & Tube Co. at Indiana Harbor, Ind. Of the four blast furnaces begun last year, Inland Steel Co., Indiana Harbor; Midland Coke & Iron Corp., Granite City, Ill.; Central Furnace Co., Massillon, O., and Mystic Iron Works, Everett, Mass., three were west of the Ohio-Pennsylvania line and two in the immediate Chicago district.

Paraphrasing politics, as go soft steel bars so go consumptive requirements. Plates and shapes flow into rather well defined channels but bars, always unorthodox, spread out into a multitude of uses and afford an unfailing gage of expanding industry. Putting together bar, plate and shape production at Chicago last year, bars accounted for 49 per cent of the tonnage, compared with 46 per cent in 1924 and over 35 per cent in 1923.

Probably the most obvious cause of this forging ahead by Chicago producers was the unprecedented volume of building in the areas they supply. Last year's building permits in Chicago, for example, approximated $370,000,000 and nosed out even 1923. The waves of commodities required for this volume of building beyond structural steel and reinforcing bars, such as plumbing, wiring, roofing and heating systems, laved the shores of a score of industries centering in the Chicago district. In 1925 the Chicago district has become the home of the domestic oil burner industry.

An additional reason, although largely sentimental, was the passing of Pittsburgh plus. The federal trade commission's edict late in 1924 affected only sheets and wire directly, but it did tend to focus attention on home sources of steel supply. The general quickening contributed to demand that resulted in the largest annual production of pig iron and finished steel in the history of the district. The 1924 total of shipments was passed by pig iron as early as Oct. 1 and by finished steel Oct. 10.

But these, of course, are superficial explanations. One year by itself may mean nothing, but when its developments are so unmistakably sequent to the trend of the preceding ten years as were those of last year, then they warrant closer analysis. Nineteen twenty five presented further proof that iron and steel demand is shifting westward, and at an accelerated pace. The underlying economics of the industry have been seen in sharper relief the past year.

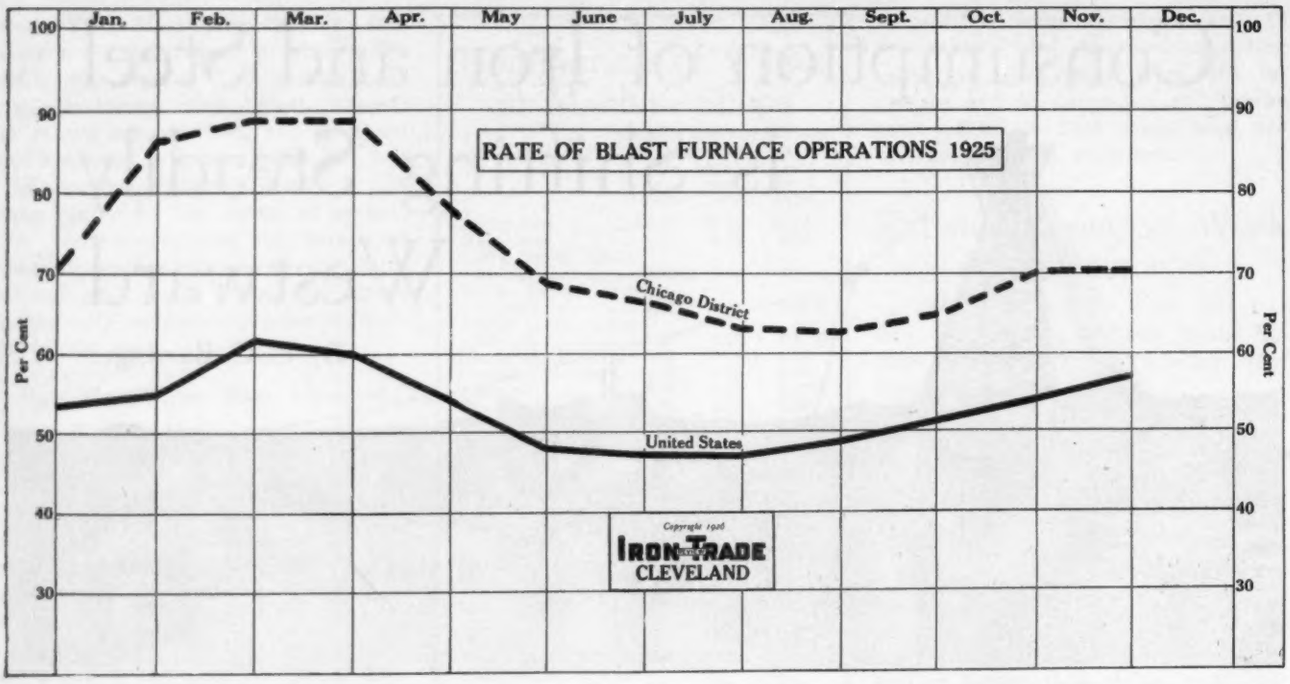
Production Follows Population

Production almost invariably follows consumption, and consumption is predicated upon population. Since the republic was founded the movement of population has been westward, and for many years will so continue. It is not hazardous to predict that the westward march of the center of population will outlast iron ore reserves in the Lake Superior region.

From 1790 to 1920 the center of population had moved from a point 18 miles east of Baltimore to a point just west of Whitehall, Ind., which is about 225 miles southeast of Chicago.

Values of Output Are Highest in History

VALUE of iron, steel and allied products of the Chicago district in 1923, *the latest year for which federal figures are available, was* $1,157,996,036, *according to the Chicago Association of Commerce, and* 1925 *is exceeding* 1923. *Itemized, blast furnace products were valued at* $157,380,664, *rolling mill at* $355,992,030, *electrical machinery and supplies at* $387,693,652, *foundries and machine shops at* $181,471,581, *forgings at* $17,710,876 *and machine tools at* $5,812,474. *The Chicago district includes six northern Illinois counties and the Hammond-Gary-Indiana Harbor district of Indiana.*



Since 1900 this center mark of population has been veering slightly northward as well as westward. It is now tending to pass about midway between Chicago and St. Louis. At its recent snail-like pace of one mile per year, it will not cross the Indiana-Illinois boundary for 50 years.

Since 1840 the center of population has been tending irresistibly away from Pittsburgh, but not for 20 years after it had crossed the freight rate boundary line between Pittsburgh and Chicago did the Chicago district begin to react to the consumptive capacity springing up at its gates. The freight rate structure was designed, naturally, to favor Pittsburgh in what is now disputed territory, and considerable advantage still accrues to Pittsburgh.

Steel Feels Population Pull

But in general, as the center of population has drifted toward the west, the center of steel production has felt this pull and the Chicago district has been building up. Beyond the vision of this generation the center of population will be nearer Chicago than any other existing producing center. The advantage of Chicago over other districts in point of population, which is synonymous with consumptive capacity, is undeniable.

Chicago mills, although now falling short by 2,000,000 to 3,000,000 tons of meeting the annual finished steel requirements of their undoubted territory, firmly believe they will increase their dominance. Pittsburgh, Birmingham and St. Louis are inclined to take exception.

The vast Mississippi basin constitutes the battleground and the Mississippi river itself, as will be seen later, may well prove to be the deciding factor. On the basis of existing freight rates the dividing line between Chicago and Pittsburgh territory runs from Detroit through Toledo and Dayton, O., to Cincinnati. If this line were carried south through Chattanooga and thence to Mobile, passing to the west of Birmingham, thereby roughly defining Chicago and Pittsburgh territory, it will be found that west of the line or in Chicago territory is 51 per cent of the total population, 71 per cent of the crops is raised and 70 per cent of the country's railroad mileage has been laid. The Chicago Association of Commerce has compiled statistics showing that from 1919 to 1921, inclusive, the United States Steel Corp. shipped to destinations west of this line products of a total tonnage of 13,024,515, compared with 12,264,667 tons east of the line.

From the standpoint of production, Chicago mills are nearest this dense consuming territory, and the trend in recent years in railroad freight rate making has been to localize business. Chicago is closer to the Lake Superior iron ore mines than Pittsburgh.

Limestone is available by a short water haul. At present Pittsburgh is nearer acceptable coking coal than Chicago but Illinois coal is winning greater favor and this handicap may eventually be wiped out. Time and gradual depletion of the higher grade iron ores of the Lake Superior region are believed by Chicago to be on its side. The Chicago Association of Commerce said in a recent survey:

"Concerning the entire Lake Superior district, the fact stands out that the quality of iron ore supply is gradually changing from high to lower grade. This subject has been a point of discussion and speculation by steel men for many years. To mine and smelt high grade ores is profitable but to convert low grade ores reduces profit and increases competition between steel producing districts. The eastern steel producing districts have been able to bear heavier transportation charges became of the high grade ore they have received from the Lake Superior district. Chicago's position as a steel producing center will be strengthened as production costs in eastern districts grow."

Much Expansion of Plants

Recent expenditures by producers in the Chicago district indicate confidence. The Illinois Steel Co., in addition to its continual quiet improvement of its properties, is putting $4,000,000 into an alloy steel bar mill at its South Chicago works. The Youngstown Sheet & Tube Co., having doubled its pig iron capacity at Indiana Harbor, is adding pipe and putting in sheet capacity there. The Gary Tube Co.'s big plant at Gary, Ind., will shortly be completed.

The Inland Steel Co., destined in popular belief to be the western end of a large independent consolidation, is building a fourth blast furnace at Indiana Harbor, adding coke ovens and electrifying its mills. The Jones & Laughlin Steel Corp. has made no formal announcement of its plans but has been filling in its site along the Indiana Harbor ship canal the past year. The Bethlehem Steel Co., the only

large independent producer not now represented by plant or site at Chicago, has spent many millions the past two years enlarging its window on Lake Erie, at Buffalo.

St. Louis, with its emphasis upon "ship from the center, not the rim," promises to make a bid for the western steel center of the future and by next summer will have its second blast furnace but economic forces beyond the control of any producing district will decide.

The Northwest is building up more rapidly than the Southwest. The center of population is veering toward the Northwest. The tide of population is surging northwesterly from Chicago. Wheat, historically a virgin soil crop, is being pushed back. Wisconsin, once a wheat state, is now better known for its dairy products and even its machine tools. Increased population, bringing increased buying power, has forced wheat back because its return per acre is not adequate considering the increment in land values.

Minnesota is being subjected to the same economic pressure as Wisconsin, evidence of which is seen in the decline of milling at Minneapolis. In fact, Minneapolis is slowly moving to Buffalo. Suitable agricultural land is more plentiful in the Northwest than in the Southwest.

Waterways Show Importance

Chicago beyond all doubt is and will continue to be the outlet for the Near West and Northwest. St. Louis conceivably may share with Gulf ports as the gateway for its hinterland. Any railroad map will reveal Chicago's impregnable position as the terminus for all eastern and western trunk lines, with the exception only of several southern carriers. The 38 railroads, 23 of them trunk lines, entering Chicago undoubtedly are fixtures for all time, and will direct the paths of trade. Trade in the United States has been moving east and west, more than north and south, giving Chicago an advantage over St. Louis. The inertia of an established industry weighs on the side of Chicago as against St. Louis, much as it has for Pittsburgh against Chicago.

Both producers and consumers of iron and steel are coming to a realization of the tremendously important role to be played by the waterways of the Mississippi valley the next few years. The improvement of the Ohio river is well under way. The forces back of the Illinois or lakes-to-gulf

(*Concluded on Page* 48)

World Output Near Prewar

America Increased Her Lead and Broke All Records in Steel Production—Headed by Germany and France Europe Took a Further Step Forward—Smaller Countries Improved Their Position

BARELY 2,000,000 tons were needed last year for the world's pig iron production to attain the prewar level. More remarkable still is the fact that the output of steel ingots and castings, which already in 1923 and 1924 had exceeded prewar production, showed in 1925 a surplus of about 13,500,000 tons. These statements are based upon the statistics compiled by IRON TRADE REVIEW through the aid of its world-wide ramifications and according to which the world's production of pig iron in 1925 was 75,509,000 gross tons compared with 66,905,000 tons in 1924, 68,067,000 tons in 1923 and 77,182,000 tons in 1913. Last year's output was the nearest approach to the 1913 figure. The production of steel ingots and castings was 88,964,000 gross tons compared with 77,263,000 tons in 1924, 76,949,000 tons in 1923 and 75,019,000 tons in 1913.

The exclusive statistics collected by IRON TRADE REVIEW, as shown in Table I, cover a period of several years and afford a means of visualizing the progress made in the world's iron and steel output since the war, and comparing the relative positions of the various producing countries in 1925. The outstanding feature is that these combined countries have practically recovered their rate of production of 1913. This is true if one takes into account the fact that less pig iron is needed for the elaboration of steel owing to the increased use of scrap. Thus, after a period of 12 years, the world has produced and consumed at least as much foundry pig iron and considerably more steel than before the great war, the United States alone furnishing about half the total tonnage. Surely this indicates that general conditions are improving although each nation has not shared equally in the returns. It is of interest to note that for the first time in 1925 the statistics of the various countries of Europe show their actual output in their present boundaries, inasmuch as no one nation had actual control over the means of production of another. From now on the individual progress of these countries can be followed along a clear line.

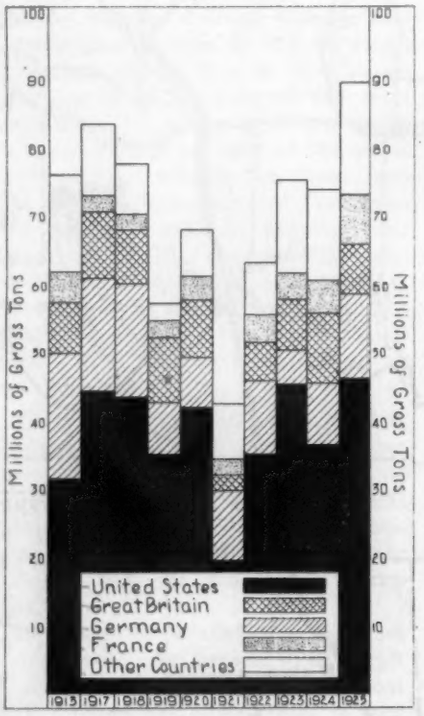


DIAGRAM SHOWING REBOUND OF WORLD'S STEEL PRODUCTION OWING TO ACTIVITY OF AMERICAN PLANTS

Away from the complications and close atmosphere of Europe, the United States gained about 5,000,000 tons in pig iron over the preceding year's tonnage. There are signs that the output will continue high at least during the first part of 1926. America's quota in the world's tonnage was 48 per cent in 1925, 46 per cent in 1924, 59 per cent in 1923. In 1913 it was only 40 per cent. The 1925 output of steel ingots and castings in the United States was exceptionally high and constitutes 52 per cent of the world's production as against 58 per cent in 1923 and 42 per cent in 1913.

Of the countries of the Old World, France and Germany emerge over all others with a marked improvement in pig iron output. Both produced more pig iron than at any time of their history in their present boundaries, and their combined production was over half that of Europe's total which reached 36,250,000 tons. Last year the output of France was about 80 per cent of her total capacity. This tonnage was easily absorbed at home as well as on foreign markets. At the end of the year French furnaces were operating at nearly 90 per cent of capacity. The improvement in tonnage has increased every year since 1917 excepting a slight falling off in 1921. However, the future of the French industries is darkened by the heavy financial charges of the country and it is doubtful whether production can continue through this year at such a high rate.

Germany's output exceeded 10,000,000 tons for the first time since 1917. When she overcomes her present shortage of capital she will be able to finance her exports and give an extra impetus to her production. In the meantime she has maintained so far the obligations which she incurred under the Dawes plan, and the signing of the Locarno Treaty has helped to clear the political atmosphere. Germany has

maintained the second place as a pig iron producing country, after America. France comes next and Great Britain now is fourth.

Great Britain last year lost over 1,000,000 tons and produced 4,000,000 tons or 40 per cent less than in 1913. Although her output was increasing again at the end of the year, British furnaces were only then operating at the rate of about 6,000,000 tons a year.

Among the smaller nations which have recovered their independence, Czecho-Slovakia improved her position considerably, last year's output of pig iron being 31 per cent in excess of that of 1924. Other European countries have shown but little progress, excepting Russia which, according to figures published by the Soviet authorities, nearly doubled her production of 1924. In India and Australia conditions were only slightly modified. China still is in the throes of revolution. Japan is gradually increasing its output.

The steel production of Europe amounted in 1925 to 40,700,000 gross tons compared with 36,000,000 tons in 1924 and 42,500,000 tons in 1913. This shows that the total excess of steel tonnage registered last year over the 1913 figure is due to the enormous activity of American plants.

Exports and imports of the principal countries are discussed in the first article appearing in the European section of this issue.

Table I

The World's Production of Iron and Steel

Before, During and Since the War—Gross Tons

Pig Iron

	1925	1924	1923	1922	1921	1920	1919	1918	1917	1913
United States	36,350,000	31,077,000	40,026,000	26,851,000	16,506,000	36,401,000	30,579,000	38,437,000	38,165,000	30,653,000
Canada	450,000	613,000	909,000	404,000	617,000	999,000	863,000	1,107,000	1,086,000	1,015,000
Great Britain	6,200,000	7,319,000	7,440,000	4,902,000	2,616,000	8,035,000	7,398,000	9,086,000	9,322,000	10,260,000
France	8,300,000	7,570,000	5,346,000	5,147,000	3,308,000	3,380,000	2,374,000	1,286,000	1,707,000	5,126,000
Belgium	2,550,000	2,763,000	2,154,000	1,578,000	862,000	1,099,000	247,000	1,000	8,000	2,428,000
Luxemburg	2,300,000	2,140,000	1,384,000	1,650,000	955,000	682,000	608,000	.....	.....	.....
Italy	300,000	299,000	243,000	91,000	75,000	107,000	251,000	328,000	497,000	420,000
Spain	450,000	400,000	304,000	175,000	175,000	248,000	290,000	380,000	352,000	418,000
Sweden	435,000	498,000	273,000	255,000	304,000	477,000	501,000	766,000	843,000	730,000
Germany	10,500,000	7,689,000	4,857,000*	9,246,000*	7,719,000*	6,931,000	6,183,000*	9,061,000*	11,436,000*	19,000,000
Austria	364,000	262,000	339,000	317,000	211,000	96,000	61,000	.....	2,000,000	2,343,000
Czechia	1,279,000	970,000	750,000	339,000	532,000	699,000	617,000	.....	.....	.....
Poland	344,000	326,000	512,000*	458,000	640,000	100,000	.....	.....	.....	.....
Hungary	300,000	295,000	295,000	246,000	50,000	30,000	.....	.....	.....	.....
Russia	1,378,000	740,000	520,000*	125,000	115,000	15,000	.....	.....	1,500,000	4,486,000
Japan	800,000	750,000	300,000	300,000	200,000	168,000	206,000	178,000	121,000	56,000
China	300,000	375,000	375,000	400,000	600,000	.....	.....	.....	.....	.....
India	800,000	877,000	536,000	350,000	371,000	312,000	320,000	265,000	252,000	.....
Australia	419,000	416,000	300,000	250,000	318,000	257,000	236,000	177,000	147,000	47,000
Saar Territory	1,450,000*	1,326,000*	914,000*	1,140,000*	950,000*	925,000*	.....	.....	.....	.....
Miscellaneous	200,000	200,000	200,000	100,000	149,000	181,000	100,000	68,000	100,000	200,000
World total	75,509,000	66,905,000	68,067,000	54,324,000	37,273,000	61,142,000	50,834,000	61,140,000	67,536,000	77,182,000

Steel Ingots and Castings

United States	45,500,000	37,932,000	44,944,000	33,603,000	19,744,000	42,133,000	34,671,000	44,462,000	45,061,000	31,301,000
Canada	600,000	650,000	885,000	485,000	669,000	1,109,000	928,000	1,695,000	1,562,000	1,043,000
Great Britain	7,500,000	8,221,000	8,482,000	5,881,000	3,703,000	9,067,000	7,894,000	9,539,000	9,717,000	7,664,000
France	7,300,000	6,791,000	5,029,000	4,464,000	3,010,000	3,002,000	2,151,000	1,780,000	2,196,000	4,614,000
Belgium	2,450,000	2,815,000	2,250,000	1,539,000	780,000	1,233,000	329,000	10,000	10,000	2,428,000
Luxemburg	2,050,000	1,857,000	1,182,000	1,368,000	747,000	561,000	360,000	.....	.....	.....
Italy	1,600,000	1,337,000	1,100,000	600,000	672,000	762,000	763,000	976,000	1,311,000	918,000
Spain	500,000	475,000	453,000	250,000	100,000	150,000	250,000	320,000	480,000	381,000
Sweden	466,000	488,000	294,000	343,000	203,000	430,000	483,000	536,000	572,000	582,000
Germany	12,500,000	9,680,000	6,204,000*	11,527,000*	9,837,000*	9,130,000*	7,748,000*	11,641,000*	14,093,000*	18,631,000
Austria	458,000	364,000	491,000	473,000	329,000	196,000	.....	.....	2,872,000	2,584,000
Czechia	1,476,000	1,328,000	1,000,000	630,000	904,000	958,000	774,000	1,003,000	.....	.....
Poland	827,000	671,000	1,275,000*	930,000	1,476,000	60,000	.....	.....	.....	.....
Hungary	250,000	235,000	344,000	295,000	90,000	40,000	.....	.....	.....	.....
Russia	1,870,000	1,125,000	720,000*	212,000	161,000	45,000	.....	.....	2,000,000	4,760,000
Japan	900,000	800,000	500,000	500,000	558,000	301,000	295,000	328,000	364,000	13,000
China	150,000	200,000	200,000	150,000	150,000	.....	.....	.....	.....	.....
India	450,000	336,000	215,000	175,000	182,000	156,000	187,000	184,000	163,000	.....
Australia	342,000	306,000	200,000	100,000	200,000	167,000	178,000	142,000	150,000	.....
Saar Territory	1,575,000*	1,452,000*	981,000*	1,245,000*	1,000,000*	990,000*	.....	.....	.....	.....
Miscellaneous	200,000	200,000	200,000	100,000	100,000	151,000	200,000	300,000	410,000	100,000
World total	88,964,000	77,263,000	76,949,000	64,870,000	44,624,000	70,641,000	57,211,000	72,916,000	80,961,000	75,019,000

*Figures for Germany include Luxemburg prior to 1919 and the Saar prior to 1920; figures for Austria prior to 1919 include the major portions of Czechia and Hungary; Poland's production prior to 1919 is covered in the figures for Germany and Russia; since 1920 Poland's figures include most of Upper Silesia, and the Saar is given separately.

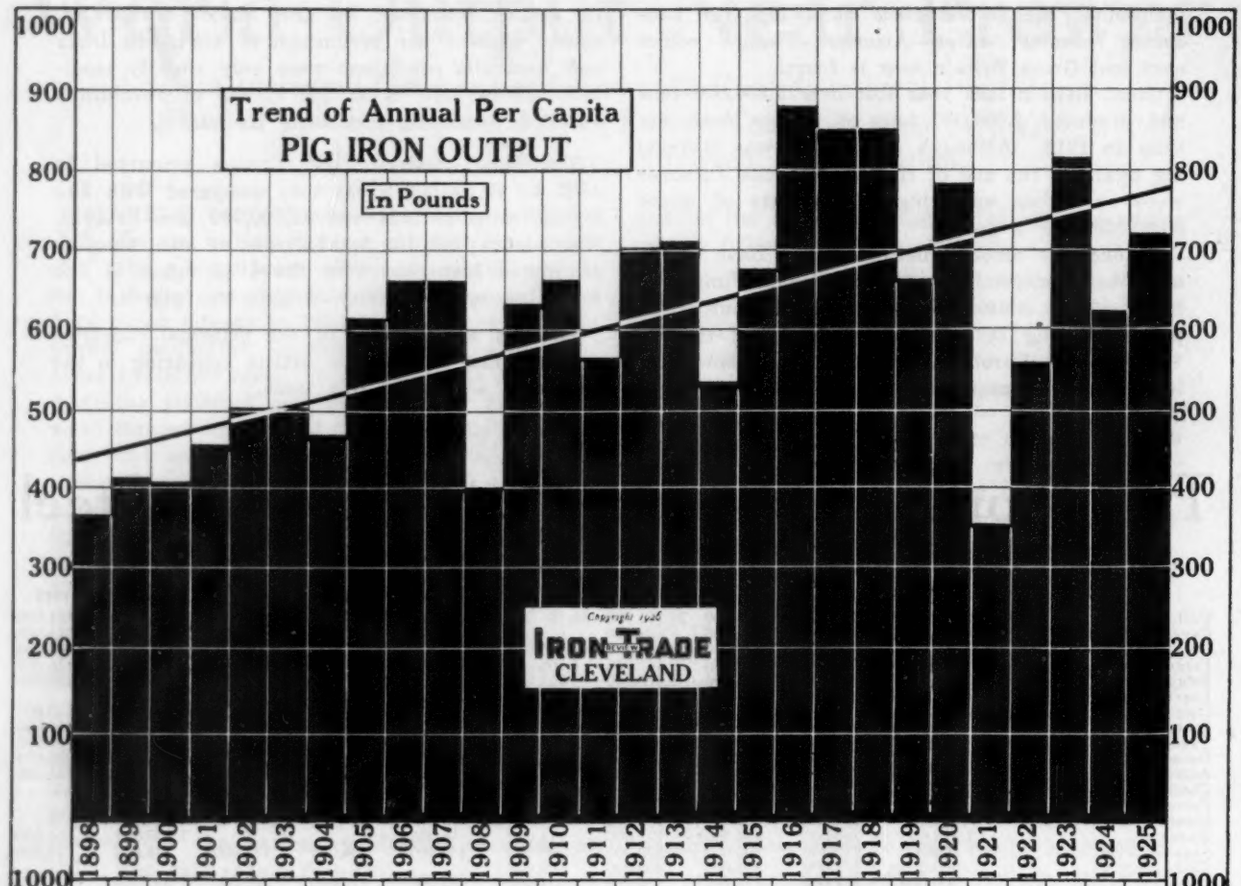
Table II

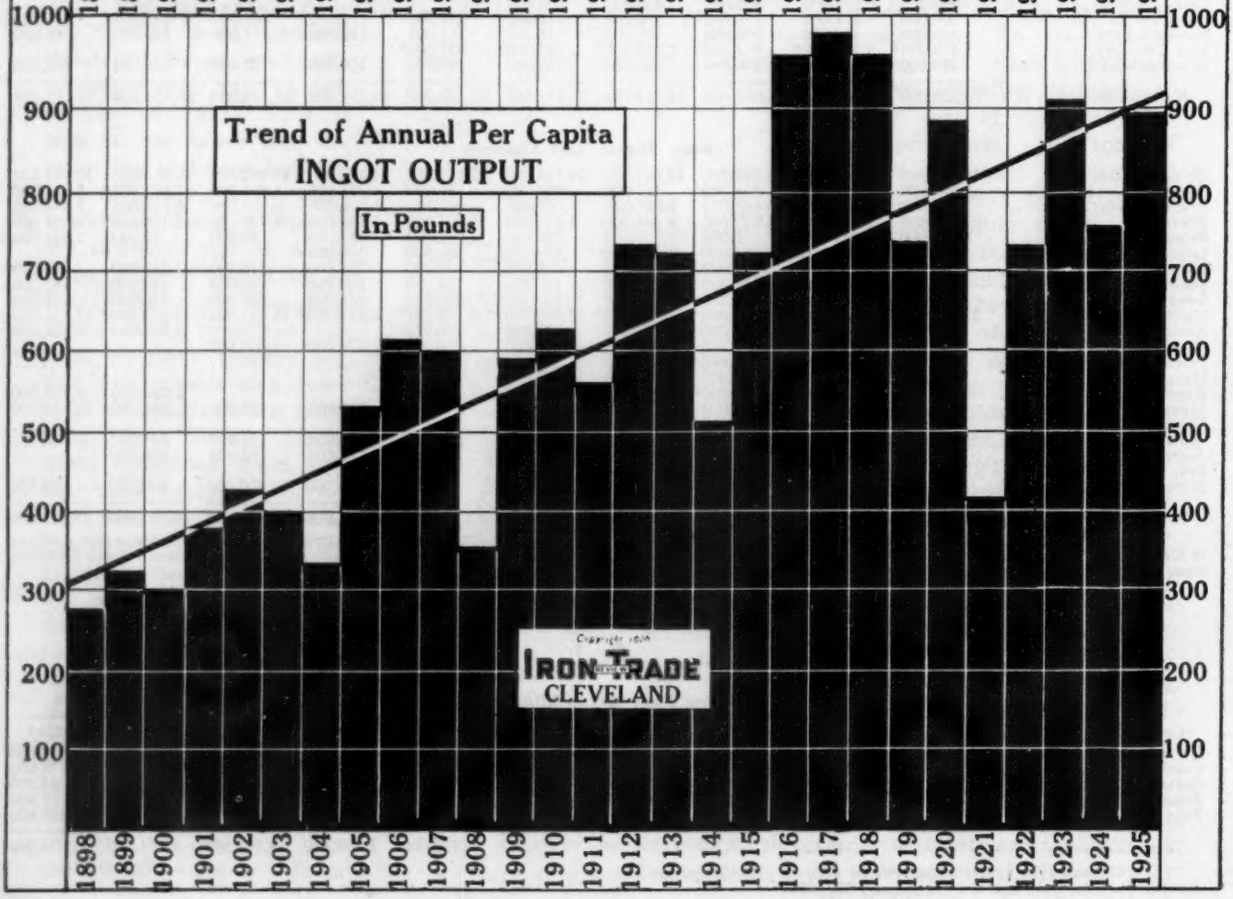
Exports and Imports of the Principal Countries

Gross Tons—Scrap Eliminated

	Exports					Imports				
Country	1925	1924	1923	1922	1913	1925	1924	1923	1922	1913
United States	1,650,000	1,707,600	1,929,500	1,992,700	2,746,000	825,000	489,400	582,800	733,300	317,000
Great Britain	3,720,000	3,853,000	4,319,700	3,401,100	5,049,000	2,700,000	2,429,300	1,321,800	881,800	2,231,000
Germany (a)	3,000,000	1,533,000	1,339,500	2,516,400	5,664,000	1,200,000	1,260,500	1,732,200	1,861,200	284,000
France(b)	3,250,000	2,736,000	2,184,400	1,968,000	578,000	170,000	677,000	704,400	771,600	155,000
Belgium(c)	3,000,000	3,289,500	2,501,600	1,715,700	1,546,000	425,000	541,200	546,100	503,100	827,000
Total	14,420,000	13,119,100	12,274,700	11,593,900	15,583,000	5,320,000	5,397,400	4,887,300	4,751,000	3,814,000

(a) 1923 and 1924 figures incomplete on account of Ruhr occupation.
(b) Includes Saar figures from January 10, 1925.
(c) Includes Luxembourg from July 1, 1922.


Trend of Annual Per Capita
PIG IRON OUTPUT
In Pounds
IRON TRADE
CLEVELAND
1000
900
800
700
600
500
400
300
200
100
1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925


Trend of Annual Per Capita
INGOT OUTPUT
In Pounds
IRON TRADE
CLEVELAND
1000
900
800
700
600
500
400
300
200
100
1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925

Per Capita Production Increases

Pig Iron Per Capita Gains 15 Per Cent Over 1924

Ingots and Castings Near Peak For Peace Time

PER capita production of ingots and castings in 1925 virtually equalled the highest ever attained in any peacetime year. The number of pounds produced, according to preliminary estimates, was 896 for each inhabitant of the United States. This compared with the 911 pounds for the peacetime peak in 1923, and it revealed a gain of 18 per cent over the per capita rate of production in 1924.

All Steel Production Per Capita 1878-1925

Year	Population in thousands	Steel ingots and castings output in gross tons thousands	Output per capita pounds
1925	113,493	45,500	896
1924	112,000	37,773	755
1923	110,663	44,943	911
1922	109,248	35,603	730
1921	107,833	19,783	411
1920	106,418	42,132	887
1919	105,003	34,671	739
1918	103,587	44,462	961
1917	102,172	45,060	987
1916	100,757	42,773	950
1915	99,342	32,151	724
1914	97,927	23,513	509
1913	96,512	31,300	725
1912	95,097	31,251	736
1911	93,682	23,676	565
1910	92,174	26,094	634
1909	90,556	23,955	592
1908	88,939	14,023	353
1907	87,320	23,362	599
1906	85,702	23,398	611
1905	84,085	20,023	533
1904	82,467	13,859	335
1903	80,848	14,534	402
1902	79,231	14,947	422
1901	77,612	13,473	375
1900	75,995	10,188	300
1899	74,318	10,639	320
1898	72,947	8,932	274
1897	71,592	7,156	223
1896	70,254	5,281	168
1895	68,934	6,114	198
1894	67,632	4,412	146
1893	66,349	4,019	135
1892	65,086	4,927	169
1891	63,844	3,904	121
1890	62,948	4,277	152
1889	61,298	3,385	123
1888	59,974	2,899	108
1887	58,680	3,339	127
1886	57,404	2,562	99
1885	56,148	1,711	68
1884	54,911	1,550	63
1883	53,693	1,673	69
1882	52,495	1,736	74
1881	51,316	1,588	69
1880	50,156	1,247	55
1879	48,886	935	42
1878	47,598	732	34

Pig iron's record does not loom with equal impressiveness. The per capita output for the year was 720 pounds compared with 622 pounds in 1924, a gain of 15 per cent. The record failed to come up to the high mark set in 1923, however, when 815 pounds of pig iron were made for each inhabitant.

According to these figures there were 176 pounds more of ingots and castings made per capita in this country than of pig iron. This bears out a tendency which has been growing stronger in recent years. Production of ingots has been outstripping that of pig iron largely because of the more extensive use of the open-hearth process of producing ingots which makes possible a liberal use of scrap metal.

Aggregate output of steel ingots for 1925 is estimated at 44,400,000 tons. This is a new high record for all time and it compares with the previous peak of 43,619,000 tons in 1917. The indicated volume of steel castings for the year is 1,100,000 tons bringing the total for ingots and castings at 45,500,000 tons. As shown by the graph on the opposite page the per capita production of ingots and castings in 1925 was practically at the computed normal line. The estimated population of the country was 13,493,720 on July 1, 1925, according to the United States census bureau.

In 1924 there was no accumulation of excess stocks of steel and from the most reliable evidence there has been none in the past year. Production has made a new top, but it has been in response to legitimate demand for consumption. The fact that ingot and castings output in 1925 was nearly at normal expectations as measured on the chart but did not exceed this level, may be counted as a healthy sign. Although consumption has mounted to great peaks, buying and outputs have not over-stepped the boundary line of safety. The country, in fact, enters the New Year with large needs for steel manifest.

The estimated production of pig iron in 1925 was 36,530,000 tons. This was a gain of 17 per cent over the total for 1924, but it was about 10 per cent below the level for 1923. Consequently the production per capita was smaller also. The peak of per capita output of pig iron was attained in 1916 when the pressure of war demand brought an increase to 846 pounds. The highest peacetime war year was in 1913 with 815 pounds and the second highest peacetime year was 1920 with 777 pounds per capita. Before the war the best year was 1913 with 713 pounds of pig iron output per capita. Ingot output per capita reached its highest total for any year in 1917 with 987 pounds. The best prewar year was 1912 with 736 pounds per capita.

Per capita production of steel ingots now exceeds that of pig iron. Such was not always true. In 1878 the per capita output of iron was 108 pounds compared with 34 pounds of steel ingots. From that time to 1925 output of pig iron per capita has increased by 566 per cent while that of ingots has increased by 2535 per cent.

Pig Iron Production Per Capita 1878-1925

Year	Population in thousands	Pig iron output in gross tons thousands	Output per capita pounds
1925	113,493	36,530	720
1924	112,000	31,082	622
1923	110,663	40,277	815
1922	109,248	27,219	557
1921	107,833	16,688	345
1920	106,418	36,926	777
1919	105,003	31,015	661
1918	103,587	39,054	843
1917	102,172	38,621	846
1916	100,757	39,434	876
1915	99,342	29,916	677
1914	97,927	23,332	533
1913	96,512	30,966	717
1912	95,097	29,726	700
1911	93,682	23,649	564
1910	92,267	27,303	663
1909	90,556	25,795	638
1908	88,939	15,936	400
1907	87,320	25,781	661
1906	85,702	25,307	661
1905	84,085	22,992	612
1904	82,467	16,497	462
1903	80,848	18,009	500
1902	79,231	17,821	504
1901	77,612	15,878	458
1900	75,995	13,789	406
1899	74,318	13,620	409
1898	72,947	11,773	361
1897	71,592	9,652	302
1896	70,254	8,623	274
1895	68,934	9,446	306
1894	67,632	6,657	220
1893	66,349	7,124	239
1892	65,086	9,157	315
1891	63,844	8,279	289
1890	62,948	9,202	327
1889	61,298	7,603	277
1888	59,974	6,489	242
1887	58,680	6,417	244
1886	57,404	5,683	221
1885	56,148	4,044	161
1884	54,911	4,097	166
1883	53,693	4,595	191
1882	52,495	4,623	197
1881	51,316	4,144	188
1880	50,156	3,835	171
1879	48,886	2,741	125
1878	47,598	2,301	108

Consumption of Steel Is Moving Westward

(*Concluded from Page* 43)

waterway, which would give Chicago water access to the valley, have sunk their differences and are now united in a broad, constructive program. Perhaps the intensified opposition of the Atlantic Coast and lower lake regions to the inland waterways is a gage of their coming importance. Not all of the opposition to the diversion of Lake Michigan water into the Chicago drainage canal has been aimed at Chicago's act alone.

Whatever advantage Pittsburgh district steel producers surrendered through the abandonment of Pittsburgh plus they seem determined to regain by an intensive use of rivers. Consumers hundreds of miles nearer Chicago than Pittsburgh have been supplied by the latter district because of the advantage of water over rail rates. On paper, Chicago threatens to step right into the middle of this picture.

Save for the last 200 miles of the Ohio river from Evansville, Ind., to Cairo, Ill., the Ohio river improvement is complete. Two locks are under way and five remain to be undertaken but navigation is now possible. It is estimated that improvement of the lower Ohio will be concluded in four years.

Chicago's outlet to the Mississippi will be via its drainage canal to the Illinois river and thence to the Mississippi. Of the five locks in this lakes-to-gulf waterway, one has been completed, the second is well along, and bids are being taken for the dam for the third and the retaining wall for the fourth. If all the needed work were to be brought under way by spring, which is possible, the waterway would be completed by the summer of 1929. Both the Ohio and the lakes-to-gulf waterways are designed to accommodate barges drawing 9 feet and laden to 6000 tons.

Water Mileage Favors Chicago

A comparison of water distances in the Mississippi valley is one-sided in favor of Chicago. From Pittsburgh to the confluence of the Mississippi and Ohio rivers is 960 miles. From Chicago to Cairo is 551 miles. Steel from Pittsburgh to Cairo will pass through 53 locks, and that from Chicago through five. From Pittsburgh to St. Louis it will be 1204 miles by water, and from Chicago only 364. Of the 1629 miles of waterways from Chicago to the gulf 1533 miles now afford a passable channel of 9 feet or more. It is estimated that $25,000,000 will complete the channel.

Consumers of steel in the immediate St. Louis district view these waterway projects as undivided blessings. If St. Louis is to become a great steel producing center the present all-rail supplies of iron ore from the Lake Superior region and the Iron Mountain district of Missouri can be supplemented by an all-water haul from Lake Superior via Chicago and the lakes-to-gulf waterway. Coking coal from Kentucky and West Virginia by water, as well as the Illinois fields immediately adjacent to St. Louis, will be available.

It may be that Birmingham will ultimately be a large all-water shipper of steel into St. Louis territory. An increasing number of students of the steel industry is viewing Birmingham, rather than Pittsburgh or Chicago, as the ultimate chief development of the Steel corporation, although Pittsburgh and Chicago always will have enormous home demand to satisfy. Birmingham, close to the Gulf, may jar Chicago's dream of recovering its Pacific Coast trade via the Mississippi.

Gulf Canal Problem Has Two Sides

Canalization of the Illinois river may very well prove to be a two-edged sword for Chicago. Foreign steel, already providing keen competition along the Gulf Coast, may penetrate into the Mississippi Basin. Chicago producers, however, contend their edge of the sword will be the sharper, and refuse to believe the day is near when European producers will take business at Chicago's back door. Whatever competition is in sight will, of course, be the keener as the product is more finished, as the difference in labor cost will be wider.

The St. Lawrence-Great Lakes waterway is in a much more indefinite state than the Lakes-to-Gulf project, which may get its final impetus at this session of congress through the granting of the necessary federal appropriation. From Chicago to Liverpool via the all-water route the distance would be 4453 miles, or 166 miles shorter than via rail through New York. In the summer of 1925 six ocean-going steamers docked at Chicago. As in the case of the outlet to the Gulf, the door would swing in as well as out.

Increasing use is being made of the Great Lakes. The Pittsburgh district is shipping wire and wire products for warehousing at Duluth and the Twin Cities. A cargo of finished steel was dispatched last summer from Buffalo to Milwaukee. Rails moved from Indiana Harbor and South Chicago to Duluth. A Chicago broker took in a cargo of 6000 tons of pig iron from Buffalo.

Tools Are Designed for Higher Production

(*Concluded from Page* 32)

ball and roller bearing for spindle applications, having preferred to retain the plain friction type. During 1925, however, several tools were redesigned to include the newer type of bearing. One of these was a miller with a spindle running in an improved bearing. Many of the drilling machines now are employing radial thrust ball or roller bearings and a great many of the grinding machines are so equipped.

The lubricating system is a vital part of every machine tool and manufacturers are constantly seeking better means for providing moving parts with ample supplies of oil. Splash, gravity feed and forced feed types of lubrication are used depending upon the machine and are made as near automatic as possible to prevent damage to the equipment through negligence on the part of the operator. Oil once used is drained to a settling tank from which it is filtered and pumped to small reservoirs or direct to the bearings.

Maximum production units is the aim of machine tool builders in designing or redesigning equipment. Competition is keen in the metalworking industry and only high production units are acceptable to buyers. As a rule, single purpose machines can be built with higher capacity than general utility tools, consequently the last year has seen many single purpose units sold, the greatest demand coming from automobile manufacturers.

Methods of Feed Improve

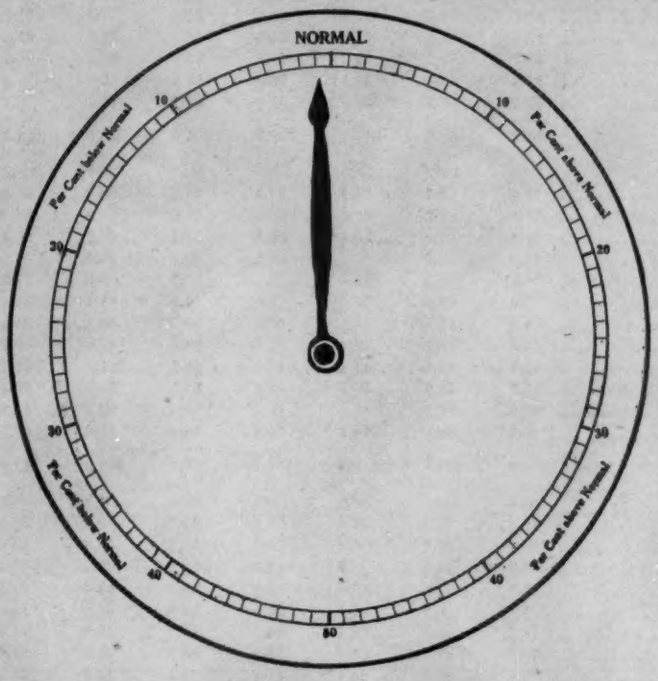
As one means of speeding machine operation, builders have made considerable improvement in feeding methods. Higher strength in tool steels has made more rapid cutting possible and as a result cutting speeds have been stepped up. To minimize the time required in returning the tool to its starting position after the completion of a cut, the back stroke has been made faster and to save time in adjusting machine preparatory to cutting, rapid power traverses have been geared up materially.

As further time saving improvements some machines have been equipped with hoisting devices for placing and removing work from the bed. One drill manufacturer has mounted the table on a piston actuated by a pneumatic cylinder, thus the work is loaded onto the table and quickly raised to the drilling position and just as quickly removed. Improved chucks of pneumatic, magnetic or manual types are assisting to conserve time.

The Business Trend

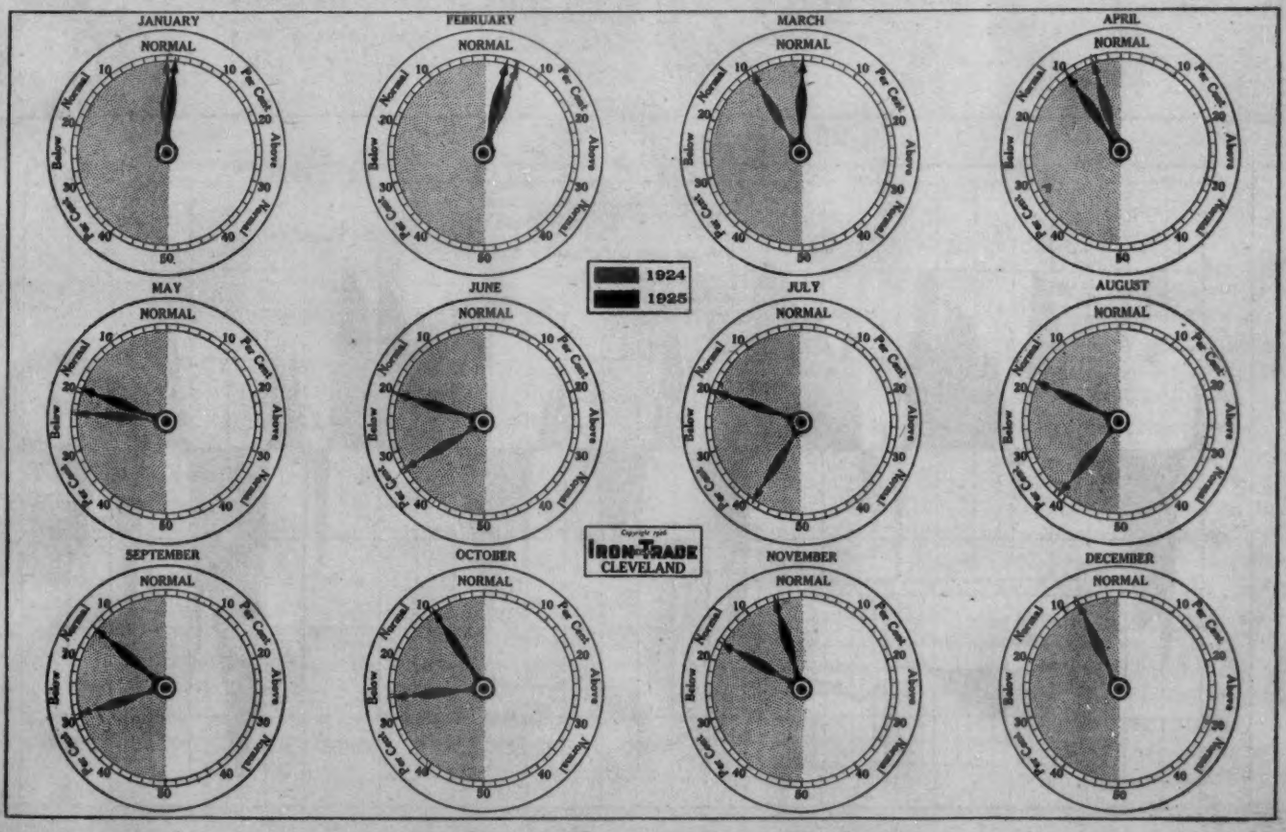
Blast Furnace Business Dial

The Dial represents the Blast Furnace Index of Business which is based upon a 40-year record of furnace activity. It is a barometer of general industry.



When 60 per cent of all the country's furnaces are in blast business conditions are normal. The Index on Dec. 31, was almost at normal point on the Dial.

BLAST FURNACE INDEX MONTHLY FOR 1925



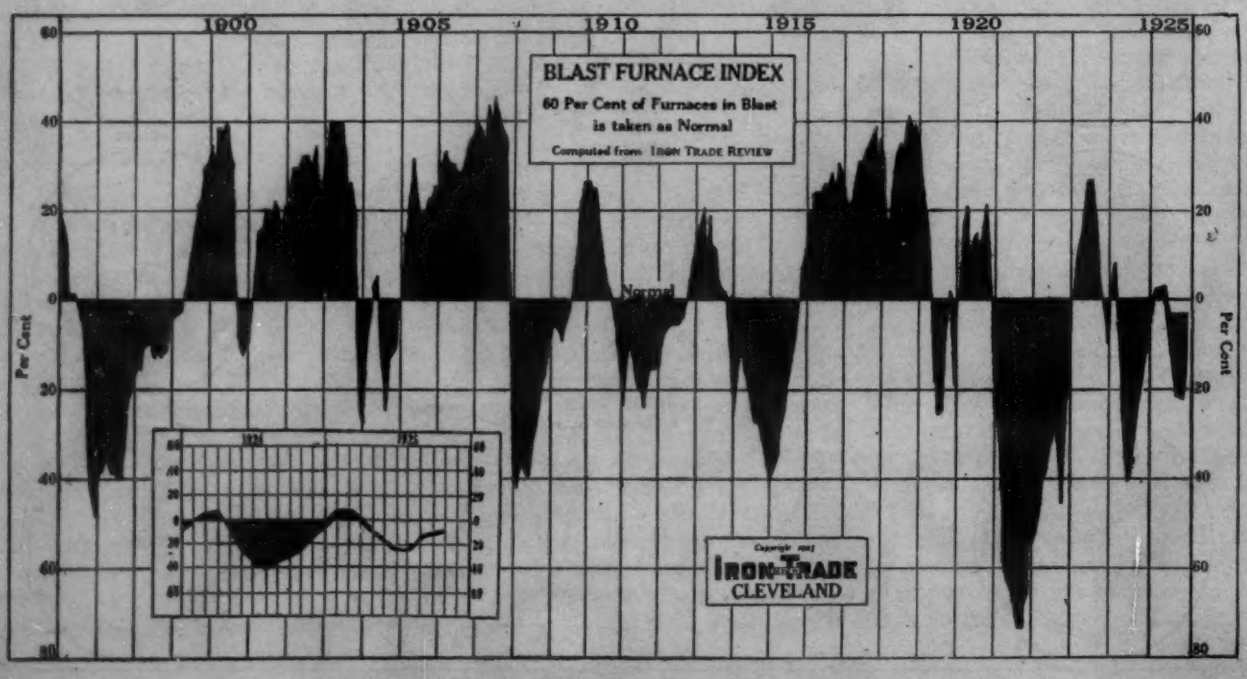
PER CENT OF FURNACES ACTIVE

Computed From Iron Trade Review, January, 1896 to Date Inclusive

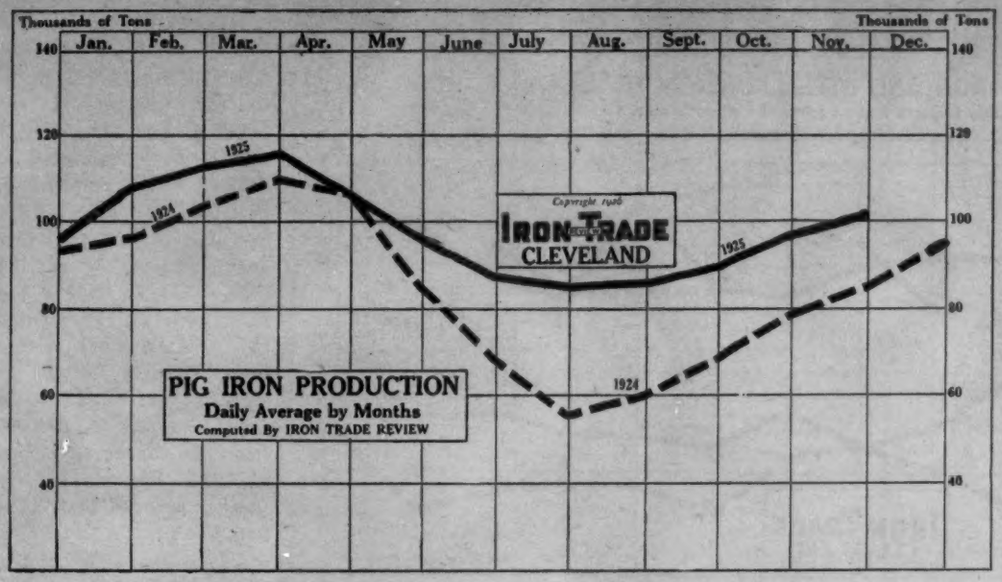
	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
January	70.6	37.1	51.9	60.0	78.8	62.2	72.6	88.3	52.7	69.7
February	64.4	37.4	51.4	59.4	82.8	66.3	76.7	84.3	57.2	70.5
March	60.8	38.9	53.5	58.3	82.8	68.9	76.1	84.4	61.8	74.8
April	61.5	38.8	54.2	62.1	82.6	69.9	78.1	84.2	64.2	78.6
May	61.2	37.2	54.6	65.3	83.6	72.4	79.4	84.0	59.5	75.9
June	59.6	37.0	52.4	67.0	82.9	72.3	79.3	79.0	52.5	72.1
July	58.0	36.3	52.9	71.3	78.7	70.7	78.9	76.2	45.7	71.3
August	50.3	36.3	52.4	73.7	64.5	73.2	77.7	76.2	51.0	71.3
September	41.1	40.2	52.8	74.1	60.6	72.8	81.0	72.7	52.8	73.7
October	35.2	44.9	55.6	77.5	56.0	68.4	76.2	60.4	53.6	73.9
November	31.5	48.2	57.1	79.0	52.6	72.7	74.2	51.8	59.3	76.6
December	35.1	50.3	58.5	80.8	55.1	73.3	78.6	43.7	64.6	75.8
	628.1	485.6	647.3	828.5	861.0	843.1	928.8	880.2	674.9	884.2

	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
January	78.4	82.7	34.9	57.6	74.6	50.0	54.0	70.1	47.0	39.3
February	79.8	82.2	37.3	57.3	74.6	53.8	55.7	72.2	51.7	42.6
March	79.0	80.6	38.7	56.3	74.4	56.2	56.4	65.6	54.8	45.2
April	78.4	86.7	36.6	55.1	69.5	52.4	56.9	70.7	50.2	46.9
May	78.4	84.2	36.7	58.1	66.7	49.0	57.3	67.8	46.9	49.3
June	76.9	87.0	39.0	58.8	64.5	48.1	57.1	67.1	45.7	52.6
July	76.8	84.8	41.8	63.0	60.5	46.3	58.1	62.6	44.3	55.7
August	78.3	82.9	45.4	67.6	57.8	48.6	60.2	61.4	44.3	58.5
September	80.9	82.6	47.4	71.9	55.7	51.0	62.6	60.6	42.7	63.3
October	81.7	78.2	50.0	74.8	54.7	50.9	66.4	57.3	38.4	65.7
November	82.2	56.7	52.8	75.3	51.9	50.9	68.2	53.1	35.7	67.8
December	84.2	38.7	54.8	75.4	45.9	51.0	68.7	45.1	36.7	70.2
	955.0	927.3	515.4	771.2	750.8	608.2	721.6	753.6	538.4	657.1

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January	72.4	73.5	67.6	75.9	65.8	42.1	29.6	61.1	60.0	61.0
February	74.3	75.1	73.4	71.5	70.5	35.5	32.4	65.6	63.6	62.3
March	74.7	78.1	77.1	64.2	72.8	23.6	36.1	69.6	65.6	60.0
April	75.8	78.3	80.4	49.7	64.2	22.0	37.5	73.4	57.1	54.0
May	75.8	79.9	82.4	45.5	68.6	20.6	41.0	76.0	45.7	48.5
June	76.7	81.2	80.8	46.0	69.8	16.9	44.7	76.0	38.6	47.9
July	75.5	81.8	83.4	55.2	66.9	15.9	39.8	71.5	35.5	47.5
August	75.8	82.8	84.6	61.4	70.4	15.8	33.5	64.5	36.5	49.2
September	77.9	79.3	83.0	37.7	72.9	19.3	44.2	60.7	42.3	51.6
October	78.4	81.8	83.4	49.9	66.7	21.9	51.0	58.6	44.2	54.1
November	76.6	79.1	82.4	58.2	58.7	28.0	56.4	55.2	49.7	57.2
December	78.1	73.8	80.7	60.5	46.5	28.7	59.2	55.2	55.6	59.5
	907.1	944.7	959.2	675.7	793.8	290.5	505.4	787.4	595.3	652.8



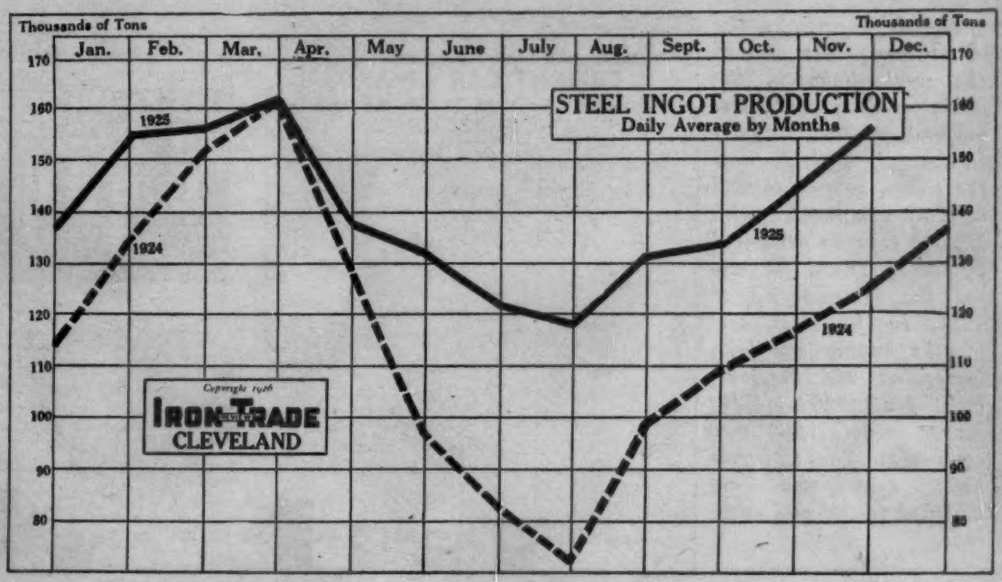
Nineteen Twenty Five Pig Iron Production Discloses Recovery



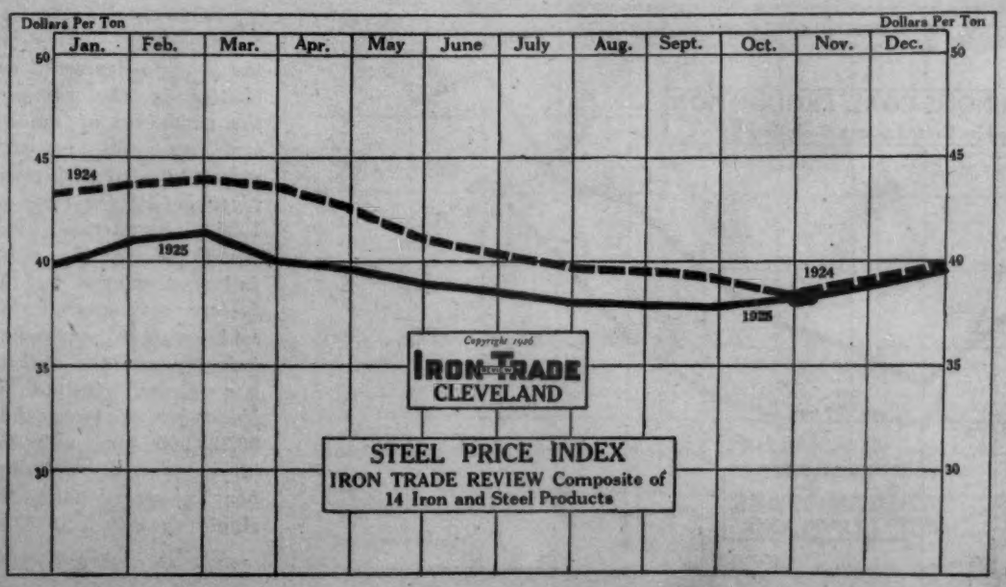
TOTAL production of pig iron in 1925 is estimated at 36,530,000 tons. This was a gain of 17 per cent over that of 31,082,451 tons in 1924, but it was 9 per cent below the peak year of 1923 when 40,277,027 tons was produced. The best month of 1925 was reached in March when output rose to a daily average of 115,207 tons. The lowest month came in July with 85,976 tons. From that point there was gradual recovery. November reached 100,620 tons daily.

Steel Ingot Output Climbs to New Peak For All Time in 1925

STEEL ingot production reached the highest peak in the history of the industry in 1925. The total estimated output of steel ingots is 44,400,000 tons. With steel castings added the aggregate output of ingots and castings was 45,500,000 tons. This was 20 per cent greater than the production of 36,593,619 tons in 1924. It also exceeded the previous peak for all time of 45,060,607 tons in the war year of 1917. Production rose to high levels in the spring.

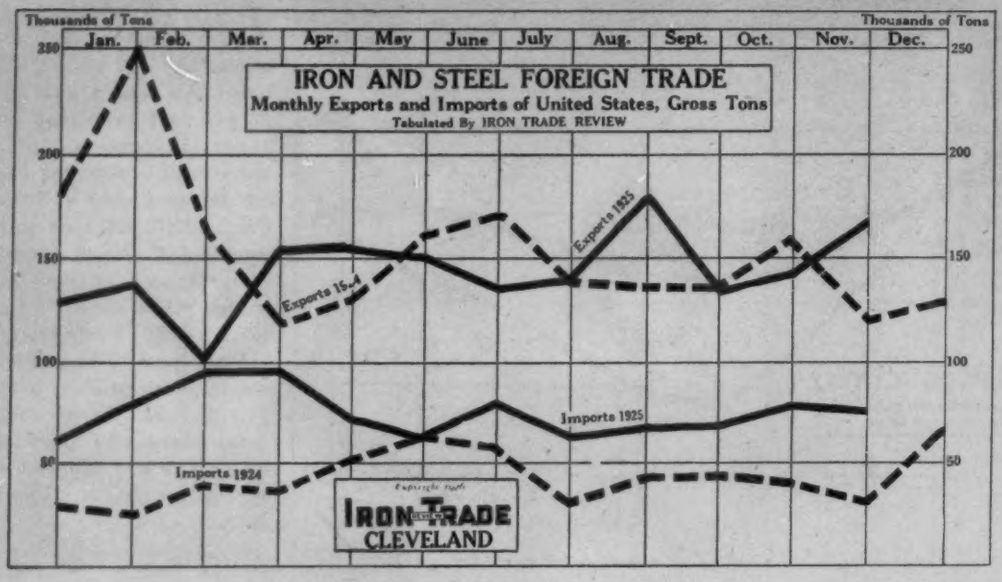


Iron and Steel Price Index Makes Distinct Forward Movement



ONE of the most outstanding and important developments in the steel industry during the past year has been the distinct recovery of prices. IRON TRADE REVIEW'S *composite market index of 14 iron and steel prices declined in the summer to the lowest ebb touched since 1922. It was then only 42 per cent over the 1913 level. Advances of recent months have brought the index to about 49 per cent over 1913 and practically to its level of one year ago.*

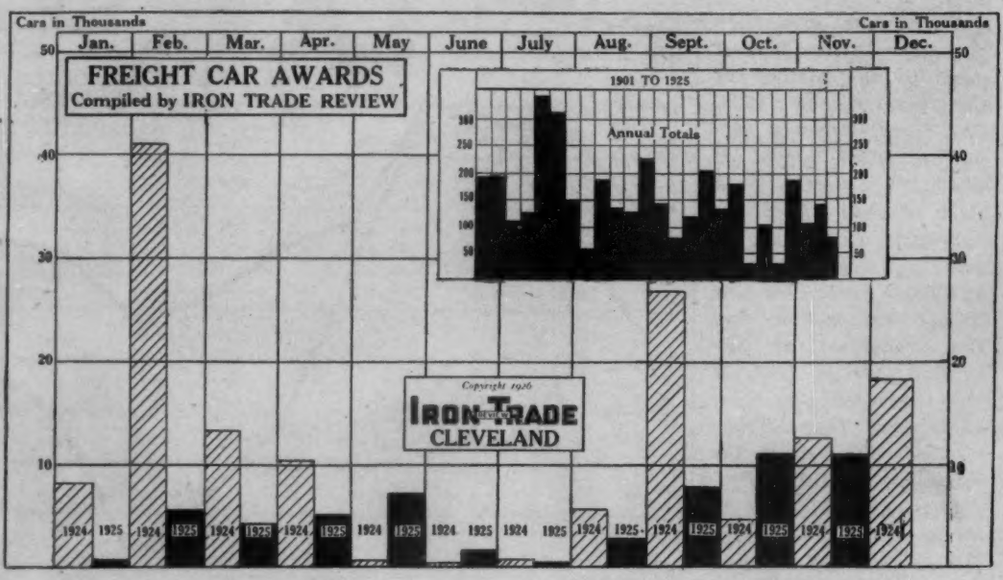
Iron and Steel Imports Rise to Higher Levels Than in Year Before



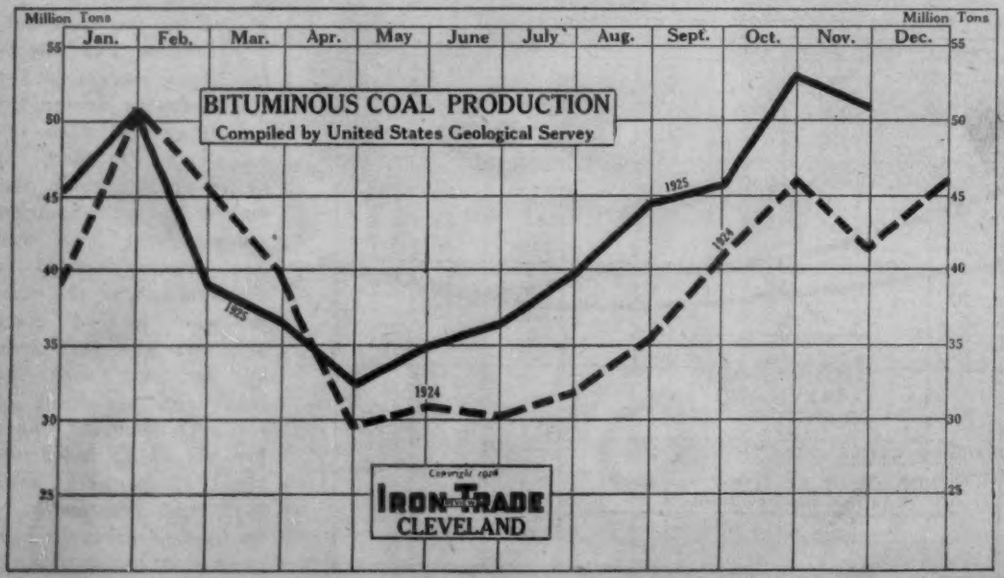
IMPORTS of iron and steel products in 1925 attained the highest total in the history of the country. For the first 11 months they amounted to 844,958 tons against 556,281 tons for all of 1924 and the former peak for any full year of 734,734 tons in 1923. Higher pig iron imports represented the greatest part of the gain. Exports for the 11 months were 1,619,625 tons against 1,676,000 tons for the same period of 1924. Exports in November spurted to 171,134 tons.

Railroads Lag in Car Buying in 1925 Against 1924 Purchases

SMALL buying by the railroads was one of the weak links in the chain of iron and steel demand in 1925. Purchases of freight cars for eleven months totaled 60,226 compared with 125,000 cars as computed by IRON TRADE REVIEW for the same period of 1924. In the last few months buying has been increasing and the outlook for 1926 is for larger orders for new equipment. The railroads have experienced unmatched traffic and earnings.



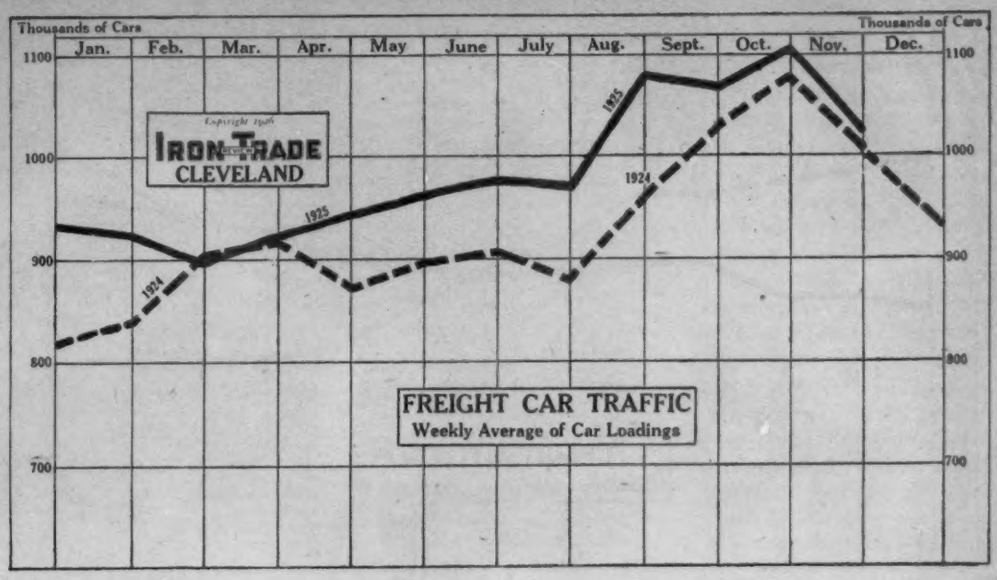
Soft Coal Production Swings Upward to High Level in 1925



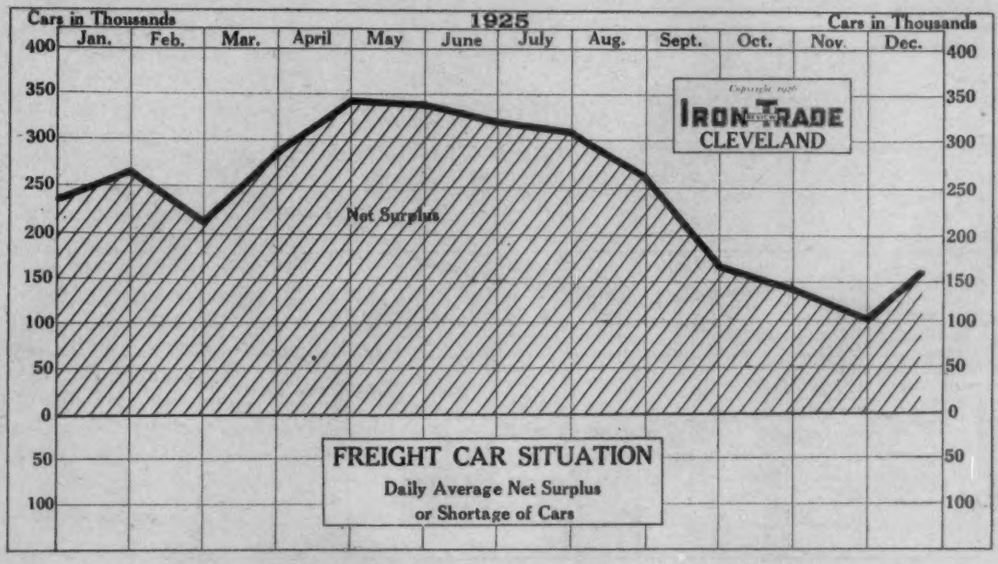
FROM high rates of production early in the year to depressed activities in the summer, the pendulum of the bituminous coal industry swung upward with great vigor before the close of 1925. Production was stimulated in the early fall and winter by the factors of approaching cold weather, expanding industry and the anthracite strike. Output in November of more than 50,723,000 tons was the largest for any November on record with the single exception of 1920.

Gigantic Mountain Peak of Freight Traffic Recorded for 1925

UNPRECEDENTED distribution of goods in 1925 has been reflected in the highest volume of freight car loadings in the country's history. Aggregate car loadings exceeded those for 1924 by about 5.4 per cent and they exceeded the previous peak of 1923 by nearly 2 per cent. Many new high marks were established during the year, among the last of which was a freight car movement of more than 1,000,000 cars weekly in the first week of December, the first time on record.



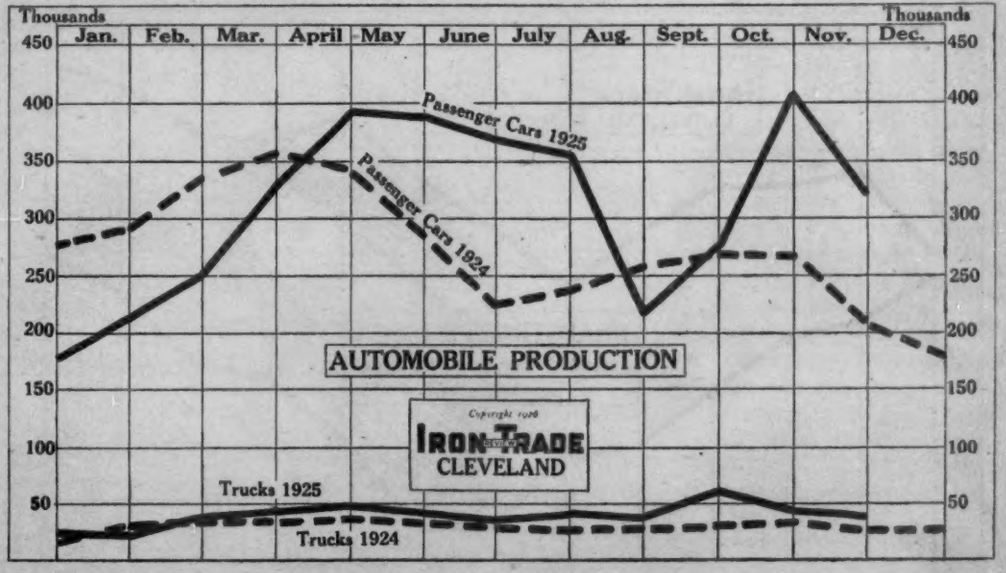
Freight Car Shortage Absent in 1925 Despite Heavy Loadings



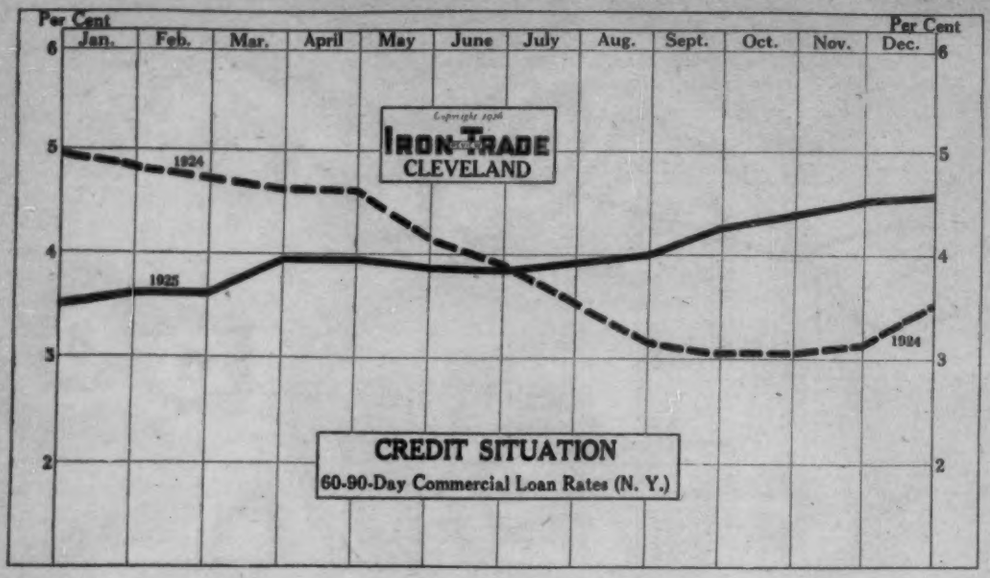
IN THE summer of 1925 the number of idle freight cars increased to about 350,000. Then came the unprecedented and almost unbroken series of weeks with record breaking loadings and idle cars began to diminish. At the peak of the traffic season in October they had fallen to about 100,000. The number has since increased sharply. Tremendous traffic has put a strain upon freight cars and although the margin of idle cars seems ample, buying is likely.

Automobile Industry Broke All Records for Output Last Year

AGGREGATE production of cars and trucks in 1925 approximated 4,200,000. This was an increase of 11 per cent over the production of 3,640,000 cars and trucks in 1924 and a gain of about 3 per cent over the previous peak of 4,080,000 in 1923. From Jan. 1 to Dec. 1 of 1925 output was 3,831,000 cars and trucks or more than during all of 1924. The number of passenger cars made in the first 11 months of 1925 increased by 14 per cent and trucks increased 31 per cent.



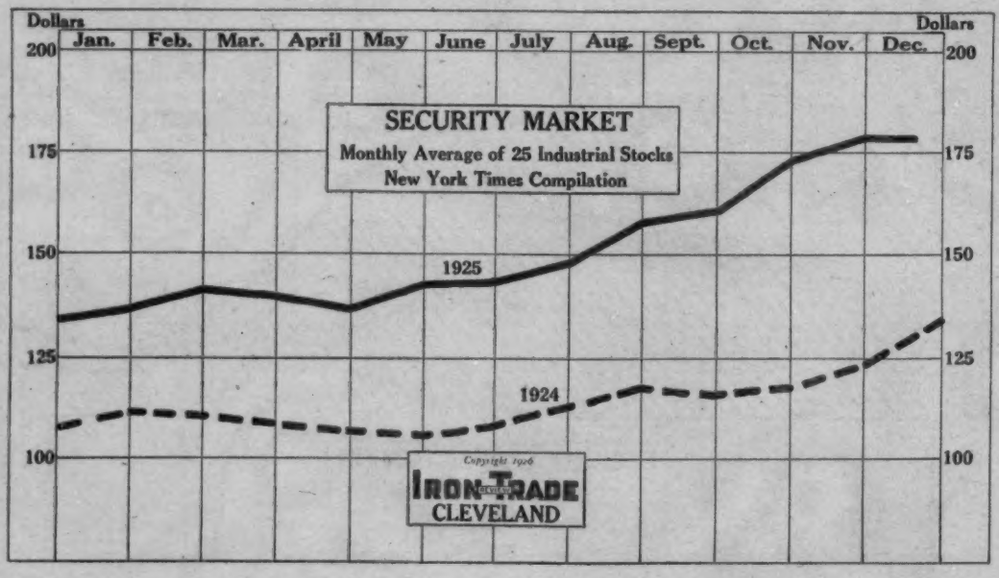
Era of Superabundant Credit Resources Passing as Rates Rise



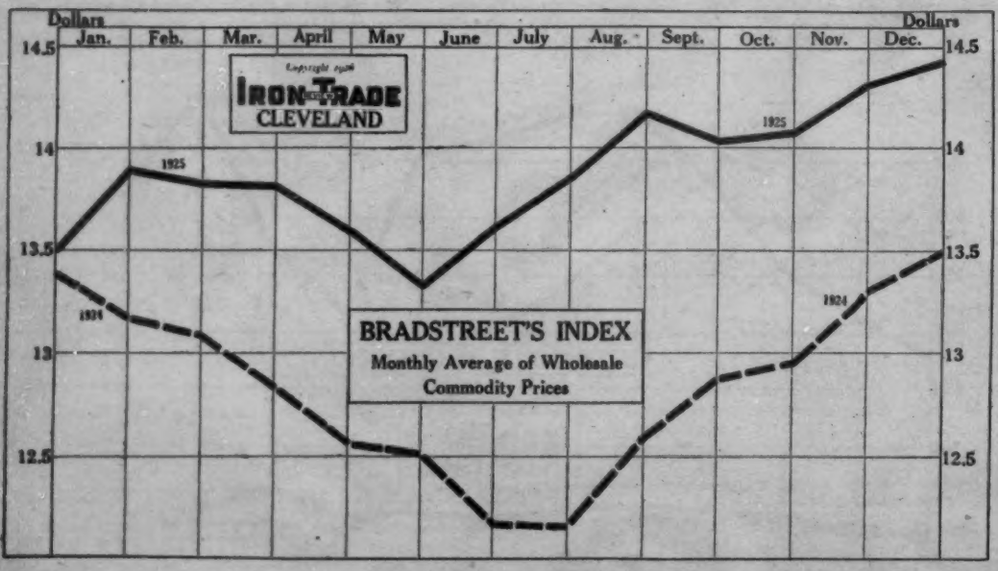
NINETEEN TWENTY-FIVE brought a gradual increase in interest rates for commercial loans. This marked the passing of the extended era of super-abundant banking resources. This era was brought about by gold imports, by dull business and diminished demands for loans. In 1925 gold imports slackened, business began to expand and stock market and land speculation boomed. These things brought greater demand for loans and consequently, higher interest rates.

Stock Market Rises To New Heights of Volume and of Values

THE greatest bull movement in all the annals of finance was the contribution of Wall Street to the records of 1925. Starting as a burst of post-election enthusiasm, the stock market rose to unparalleled heights of average values and volumes of transactions during the year. The number of transactions in stock market for 11 months to Dec. 1 was 456,000,000 against 258,000,000 in 1924. The average of 25 industrial stocks is up from 132 one year ago to 176.

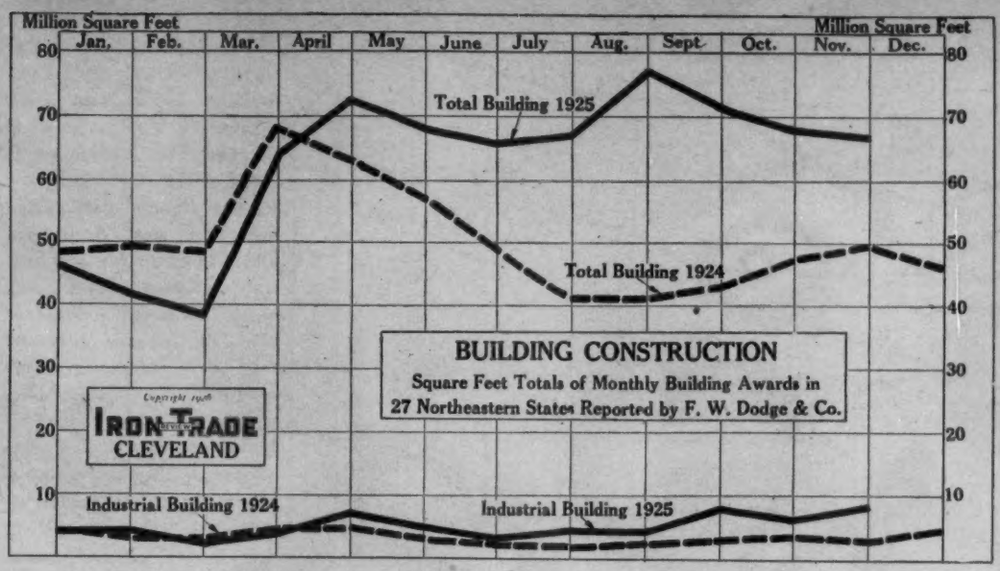


Commodity Prices, Measured by Bradstreet's, Are Now Advancing



THE general tendency of commodity prices during the first half of 1925 was slightly downward. During the closing months the tendency was upward. Bradstreet's index of wholesale commodity values stood at 14.4054 as of Dec. 1. This was 55.9 per cent over the 1913 average and gain of 6.4 per cent over Dec. 1, 1924. Price advances are now receiving the stimulus of stronger demand for commodities. Present indications are for still higher levels.

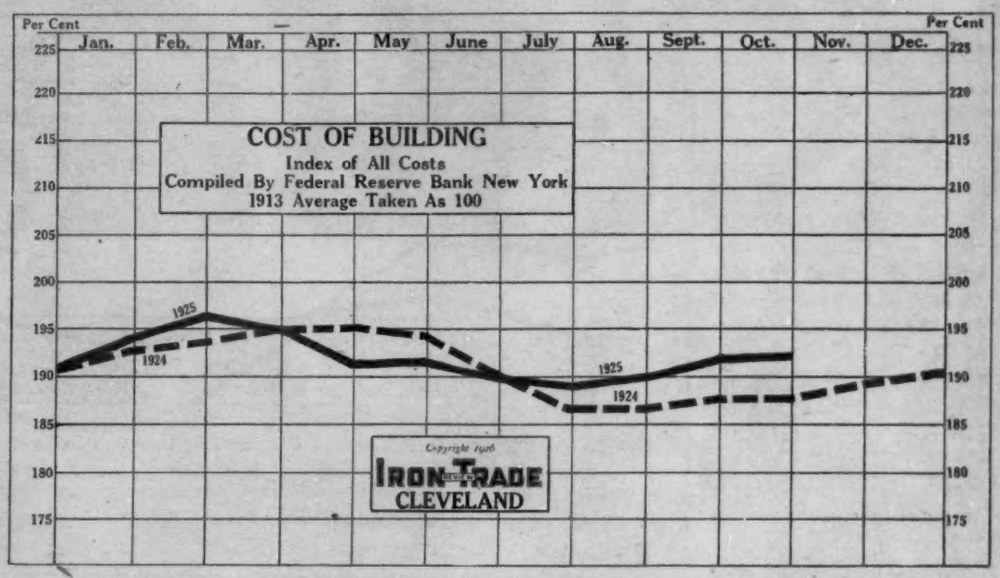
Building Construction Shatters All Its Precedents in 1925


Million Square Feet
Million Square Feet
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.
80 70 60 50 40 30 20 10
Total Building 1925
Total Building 1924
BUILDING CONSTRUCTION
Square Feet Totals of Monthly Building Awards in 27 Northeastern States Reported by F. W. Dodge & Co.
Copyright 1926
IRON TRADE
CLEVELAND
Industrial Building 1924
Industrial Building 1925

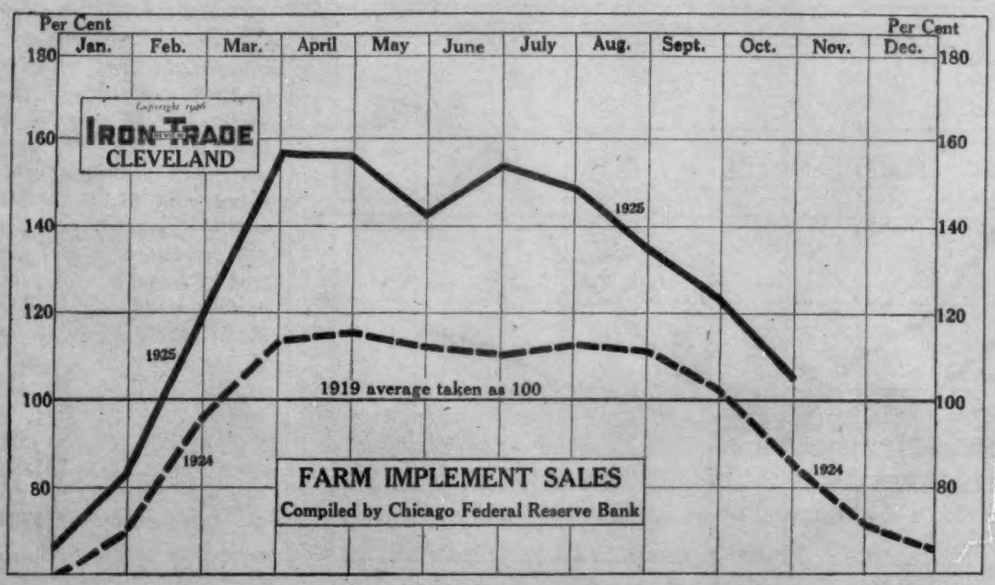
THE volume of building construction in 1925 passed all previous peaks. The total contract awards for the 11 months to Nov. 30, twenty-seven northeastern states, as reported by F. W. Dodge, amounted to 600,000,000 square feet. This compared with 558,424,000 square feet in 1924. Residential construction showed a gain of 20 per cent over 1924. The feature of recent building activities has been the striking increase in contract awards for industrial building.

Building Costs Have Held Firm At High Levels in Past Year

COSTS of construction as computed by the federal reserve bank of New York stand at 92 per cent over the 1913 level compared with 88 per cent over 1913 one year ago. During the year the index reached its high point in February at 97 per cent above 1913. There was recession during the summer until July when the index stood at 89 per cent over 1913. Beginning with August there was recovery during the latter part of the year. Building wages are at the peak.

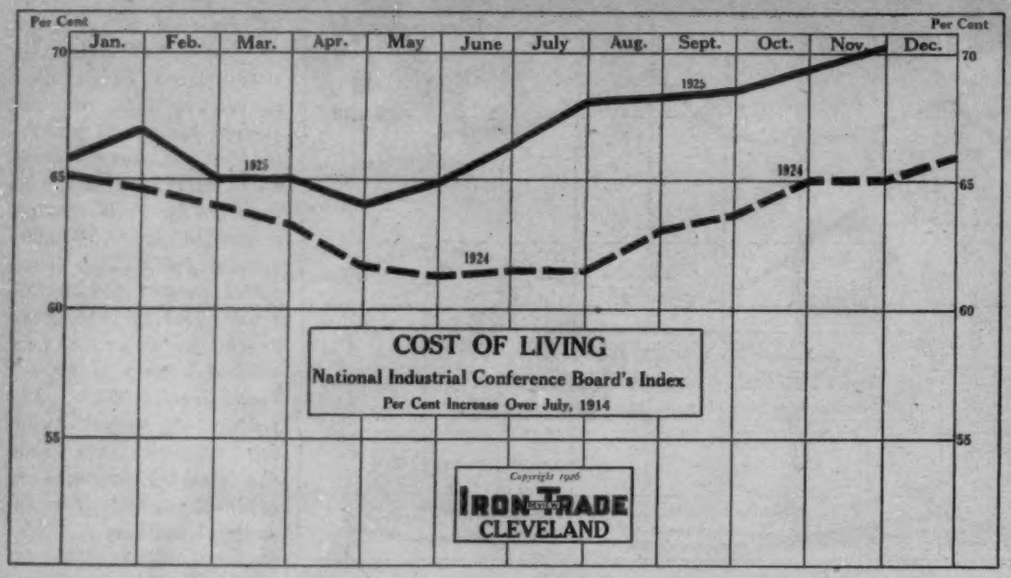


Increased Implement Sales in 1925 Reflect Farm Improvement



AFTER long depression which corresponded to the hard times experienced in agriculture, the farm implement industry began to see large scale activities and new-found prosperity in 1925. The record of sales as computed by the Federal Reserve Bank of Chicago shows that the monthly average for the first 10 months was 33 per cent over the 1919 average and 30 per cent over the same period of 1924. With fair crops and prices for most farm products at favorable levels, prospects are considered good.

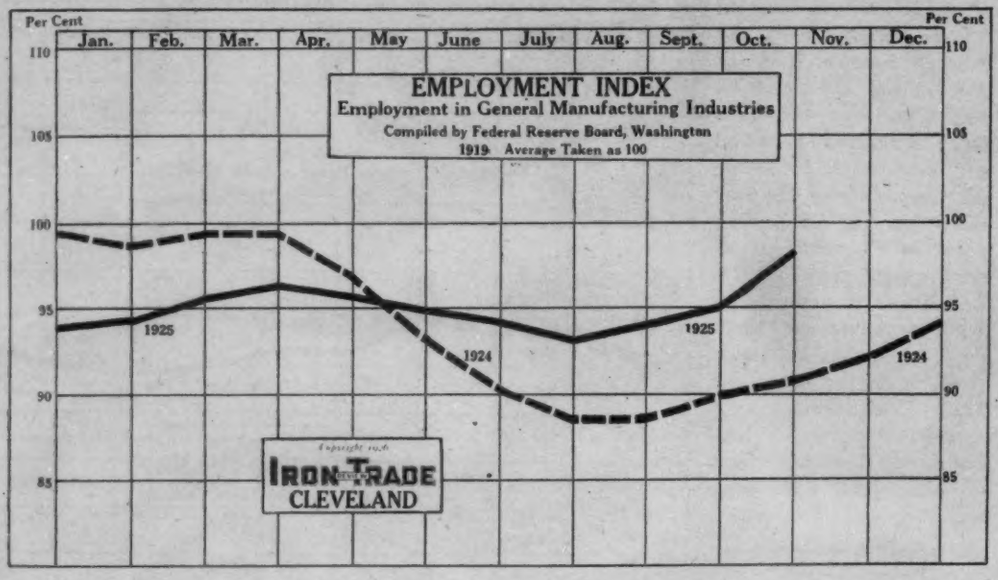
Living Costs Rise, but Not So Rapidly as Wages and Incomes



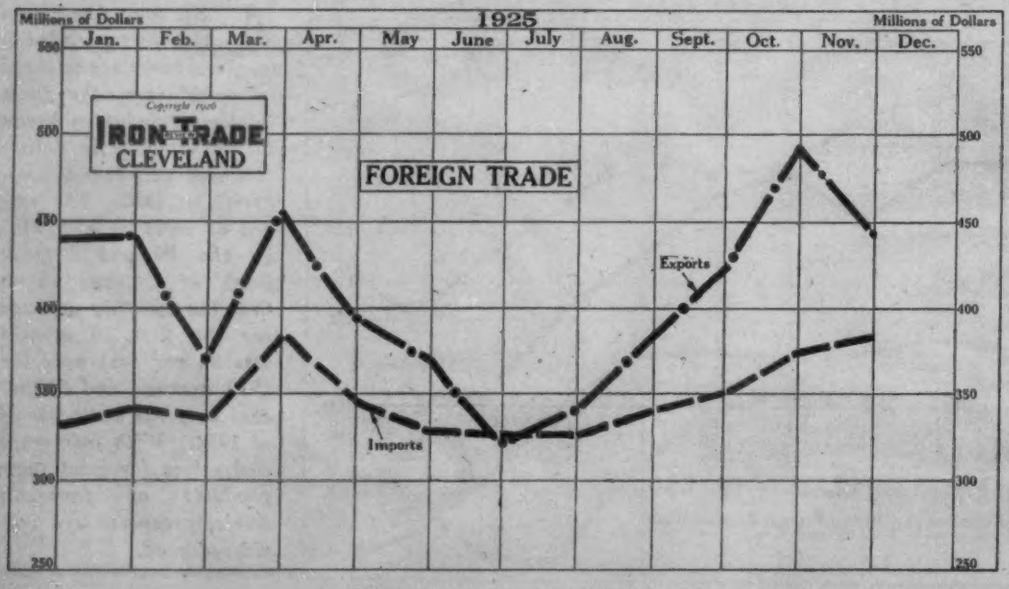
THE cost of living as measured by the National Industrial Conference board has been advancing in recent months. In November it stood at 71 per cent above 1914. Foods and clothing and fuel have advanced, while for the first time in some years, rents have declined due to an indicated oversupply of housing in some centers. Although living costs have been advancing, wages and employment have increased more rapidly, and buying power is good.

Factory Employment in 1925 Shows High Industrial Activity

DURING the past year factory employment has been at high levels. In 1924 employment was at the lowest ebb for any period since 1921 and 1922. Improvement came in the early months of 1925 and this recovery continued to make strides during the year except for the seasonal relapse in the summer. At the beginning of November employment stood at 97 per cent of the 1919 average and this was the highest level reached for any month since April of 1924.



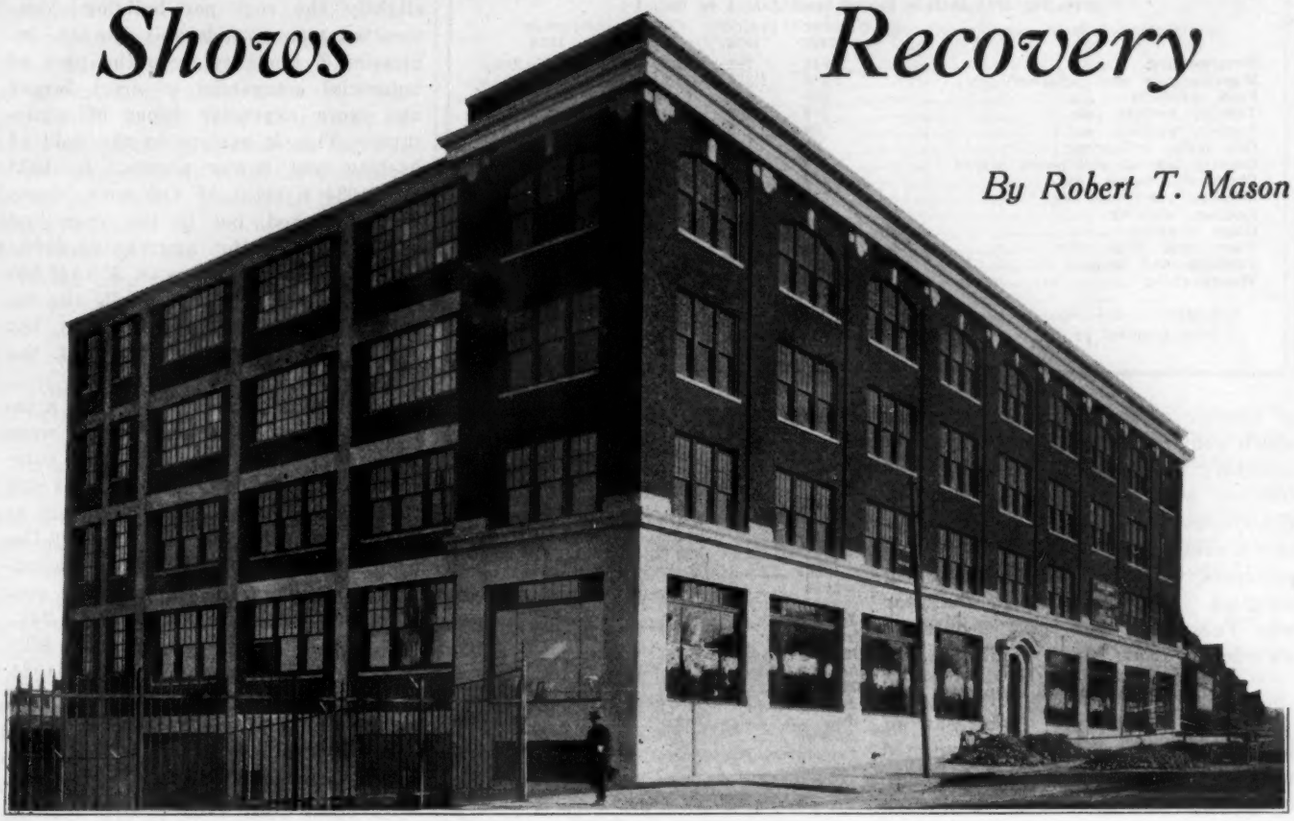
American Exports and Imports in 1925 Maintained Big Volume



AMERICAN foreign trade in 1925 was notable for the great volumes of both exports and imports. For 11 months to Dec. 1 of 1925 exports were $4,441,808,000 compared with $4,145,235,452 in the same period of 1924, an increase of 7 per cent. Imports for the period amounted to $3,831,575,000 an increase of 17 per cent over the total of $3,276,770,000 for 11 months of 1924. The excess of exports over imports was $610,233,000 against $869,053,000 in the same period of 1924.

1925 Industrial Construction Shows Recovery

By Robert T. Mason

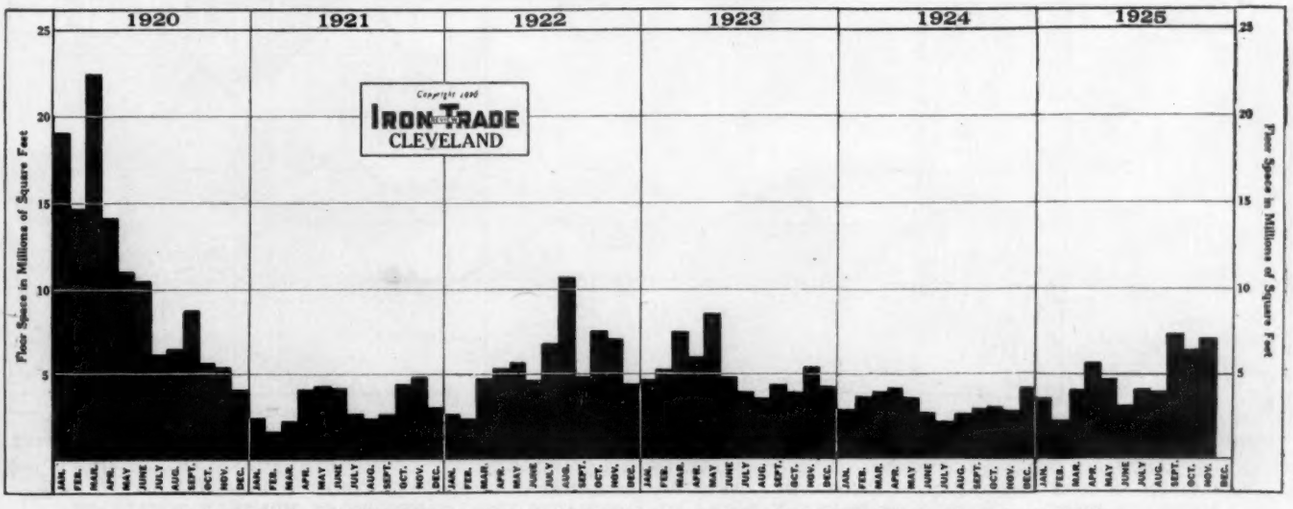


Boston Branch of the International Harvester Corp., Chicago. This Plant Was Projected Several Years Ago but not Until 1925 did Business Conditions Warrant its Construction

FAVORED by steady, conservative but enterprising and progressive business, industrial construction in 1925 recovered considerable of its momentum lost in the year preceding. Although ahead of 1924 in industrial building activity, the year just ended fell below 1923. Record-breaking proportions were attained by the building industry in general, but industrial construction, lacking the abnormal demands occasioned by the war, naturally fell behind totals of some previous years.

The slowness of industrial building activity in following the residential, educational and business construction booms has caused satisfaction rather than uneasiness on the part of architects, general contractors and builders. These building interests were more or less content during the past year to allow the development of demand for industrial construction along economically healthy and sound lines.

Whereas in 1923 and 1924 the peak of industrial building activity occurred in the spring, in 1925 the first half showed but little improvement, the real movement towards an increase coming in September when the total floor space constructed, 7,678,000 square feet, exceeded that of any month since May 1923, and was larger than any September since that in 1919. The high mark of the year just closed



INDUSTRIAL CONSTRUCTION TREND FROM 1920-5. DATA SUPPLIED BY F. W. DODGE CORP.

Building Contemplated in 1924 and 1925

Figures for 1925 Include Period from Jan. 1 to Dec. 1

	Number of projects		Cost of construction	
	1925	1924	1925	1924
Metalworking	946	792	$81,243,000	$62,015,200
Miscellaneous and unspecified	1,404	1,353	73,019,000	77,779,200
Food products	938	915	51,032,700	48,035,000
Textile, cordage, etc.	299	206	17,425,300	12,234,000
Rubber working	50	39	3,357,500	2,640,500
Oil, mills, refineries	83	101	9,406,800	14,298,300
Central heating and power plants	179	153	166,801,000	78,922,800
Chemicals, paints, etc.	173	163	12,681,400	10,555,400
Mining, quarrying, etc.	237	253	22,535,000	30,774,900
Leather working	36	46	2,151,000	2,224,200
Glass working	31	32	4,298,800	3,607,000
Paper and pulp mills	101	90	8,236,000	5,590,200
Printing and binding	170	175	11,375,800	12,295,700
Woodworking	260	270	14,546,500	9,354,500
Totals	4,907	4,588	$478,109,800	$370,326,900

Data supplied by the F. W. Dodge Corp.

in number of industrial buildings for which contracts were awarded and in monetary investment represented, was October, when 498 projects, valued at $59,601,800 were launched. November saw a continuance of this activity, 446 contracts valued at $50,232,100 being awarded. The low point of the year was February when 220 contracts awarded in value a cost of $16,302,600.

Monthly Awards Compared

Despite the natural deterrent of holidays, December totals are expected to show but little decrease from those of October and November. Following is a comparison of the number of contracts awarded, the floor space involved and the valuation for the first 11 months of 1925, and the monthly averages for the years 1919 to 1924.

Year and month Monthly average	No. of projects	Square feet in thousands	Dollars in thousands
1919	636	12,772	$ 42,744
1920	511	10,652	49,080
1921	274	2,981	14,444
1922	323	5,463	27,084
1923	338	5,184	31,568
1924	288	3,396	23,585
1925			
January	261	3,974	16,792
February	220	2,489	16,302
March	347	4,096	47,517
April	366	5,934	44,371
May	367	4,811	23,695
June	301	3,213	18,455
July	345	4,341	53,519
August	359	4,214	19,818
September	365	7,678	37,408
October	498	6,579	59,601
November	446	7,075	50,232
December	.....	.....	.....
Total for 11 months	3,875	54,226	$387,710

Figures furnished by F. W. Dodge Corp.

An interesting development in construction during 1925 was the increased cost of buildings erected. Although labor and materials increased slightly the cost per building constructed was considerably higher, indicating a tendency upon the part of industrial companies to erect larger and more expensive types of structures. This is evident in the field of heating and power plants. In 1925 and 1924 a total of 112 such plants were launched, but in the year just ended the valuation aggregated $132,723,700 as compared with $95,442,500 in the year preceding. While the total contracts in 1925 increased but 11.9 per cent over those of 1924, the gain in value was 26.9 per cent.

In the first 11 months of 1925, a total of 781 metalworking plants were projected, valued at $70,451,800 compared with contracts awarded for 603 in the same period of 1924 valued at $54,269,000. During the January-December period of 1925, 946 metalworking plants were contemplated for construction, with a valuation of $81,243,000 compared with 792 valued at $62,015,200 in the same months of 1924.

A total of 179 heating and power plants to cost $166,801,000 were contemplated but 112 were built, having a value of $132,723,700. In 1924, 153 such plants were contemplated to cost $78,922,800 and 112 were built at $95,442,500 expense.

A total of 189 plants were placed under construction in the first 11

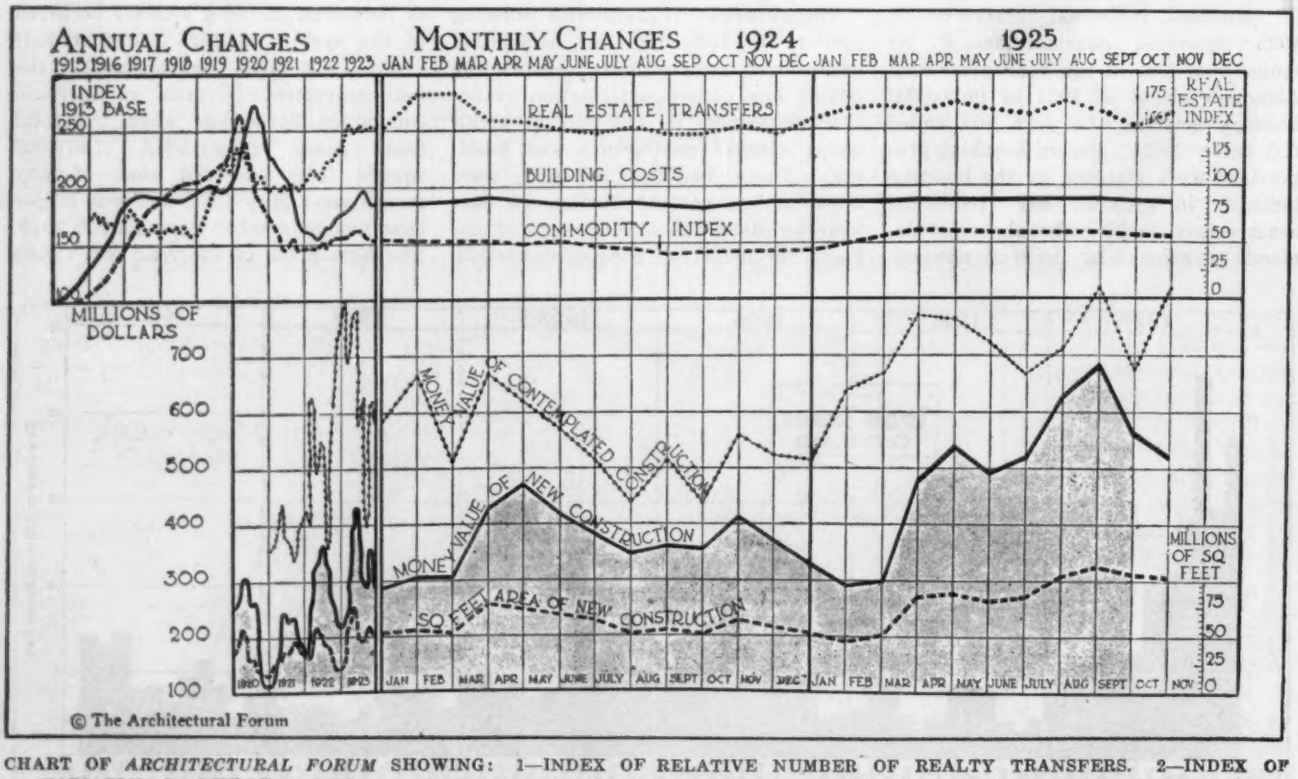

ANNUAL CHANGES
MONTHLY CHANGES 1924
1925
1915 1916 1917 1918 1919 1920 1921 1922 1923
JAN FEB MAR APR MAY JUNE JULY AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
INDEX 1913 BASE
REAL ESTATE TRANSFERS
BUILDING COSTS
COMMODITY INDEX
REAL ESTATE INDEX
MILLIONS OF DOLLARS
MONEY VALUE OF CONTEMPLATED CONSTRUCTION
MONEY VALUE OF NEW CONSTRUCTION
SQ FEET AREA OF NEW CONSTRUCTION
MILLIONS OF SQ FEET
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CHART OF *ARCHITECTURAL FORUM* SHOWING: 1—INDEX OF RELATIVE NUMBER OF REALTY TRANSFERS. 2—INDEX OF VARIATION IN BUILDING COSTS. 3—INDEX OF VARIATION IN GENERAL COMMODITY COSTS. 4—MONTHLY TOTAL VALUE PLANS FILED. 5—RECORD OF MONTHLY TOTAL OF CONTRACTS LET. 6—RECORD OF MONTHLY TOTALS OF VOLUME OF NEW BUILDING IN SQUARE FEET

months of 1925, to cost $19,517,500, compared with 179 at a cost of $14,935,900 in the mining and quarrying industries.

Woodworking plants increased less than 10 per cent in 1925 but the cost of construction gained more than 100 per cent. In the first 11 months of 1925 contracts were awarded for 217 plants compared with 201 for the same period of 1924. The cost, however, was $14,153,500 in 1925 compared with $6,770,000 in 1924.

In the construction of buildings for the printing and binding industries, 148 plants were erected at a total cost of $16,561,700 while 170 such structures were contemplated to involve an expenditure of but $11,375,800.

Labor disturbances played but a small part in the activities of the building year. Such stabilizing influences as the Landis award in the Chicago territory tended still more in the past year to remove from potency a factor considered in previous years paramount in effecting successful construction. Increasing success in arbitrating industrial disputes has aided materially in reducing the amount of lost time suffered by the building industry. Almost uniformly high wage scales, however, have been most important in maintaining unbroken operations by the building trades workmen.

Building material prices have been almost stationary during the past year, fluctuations being but minor in value and limited in scope. Although rising prices in steel during the fourth quarter caused some projects to be hastened to the award stage, thereby increasing the total for 1925, advances were not of such magnitude as to cause postponement of an unusually large number of contemplated plants.

The tendency during the past year has been to anticipate high building costs. Builders and manufacturers are beginning to realize that the hope of lower building costs is forlorn. Better standards of living made possible for the workman by high wages during the war have resulted in an increased buying power of the laborer which has contributed much to present industrial prosperity. Introduction of more labor saving machinery and equipment and development of new processes and materials are looked to as the only means of reducing costs of building materials and construction expenses.

Development of new types of buildings and construction processes were few and of minor character in 1925. Instead of radical departures from well established customs in industrial construction, builders and architects have been more inclined to concentrate on detailed improvements in the way of further operating economies.

Introduction of all steel buildings for domestic use in England and

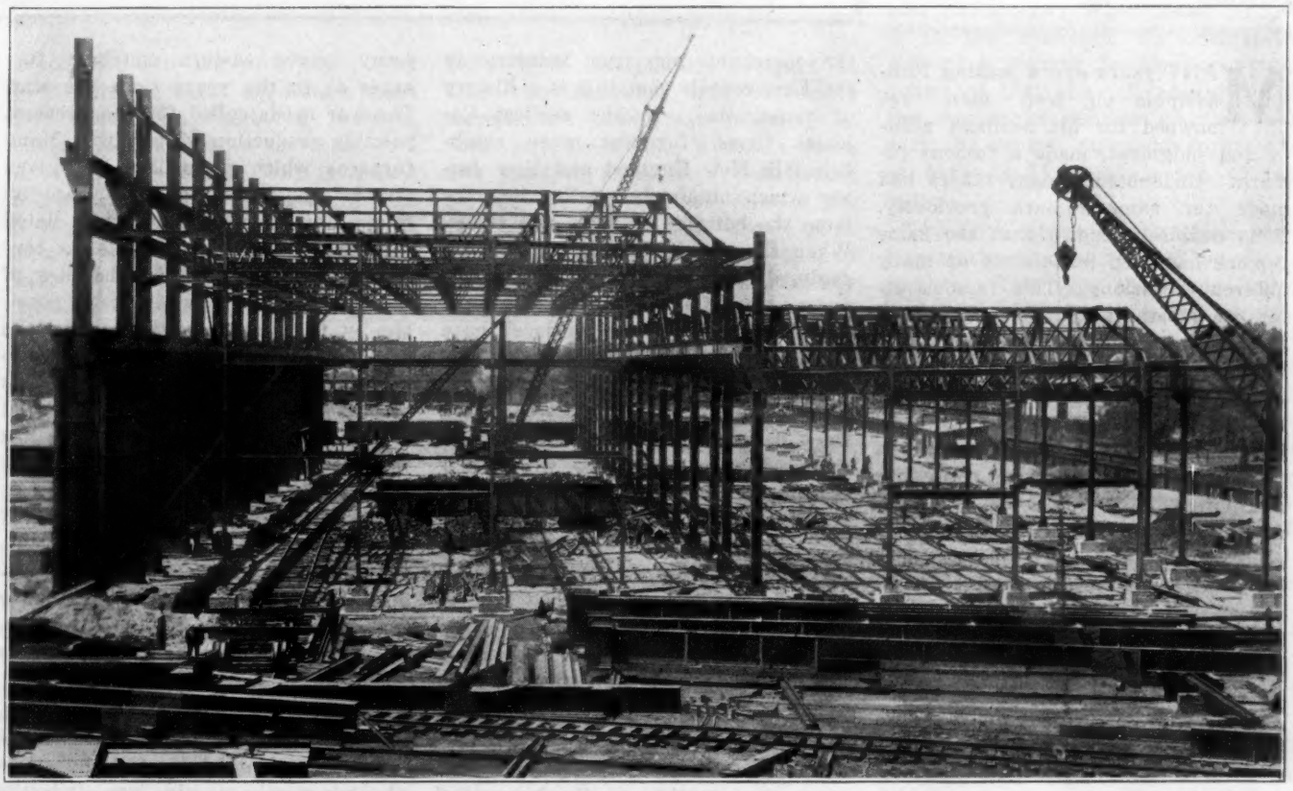
(*Continued on Page* 121)

Construction Awarded in 1924 and 1925

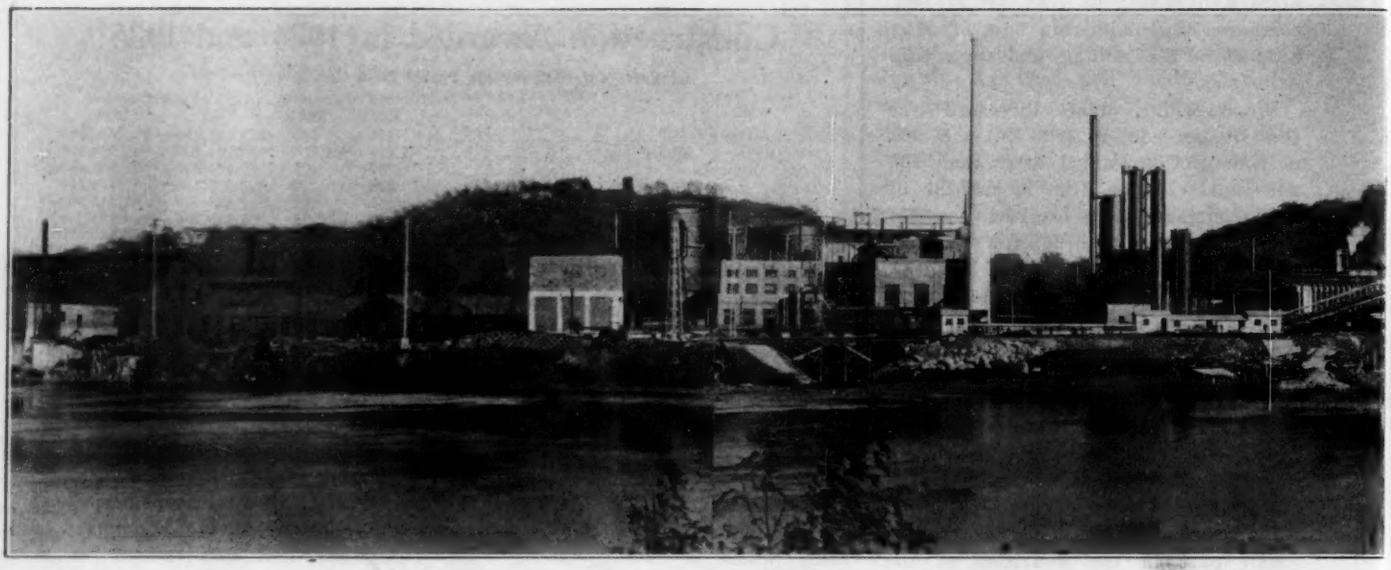
Figures for 1925 Include Period from Jan. 1 to Dec. 1

	Number of projects		Cost of construction	
	1925	1924	1925	1924
Metalworking	781	603	$70,451,800	$54,269,000
Miscellaneous unspecified	1,078	1,036	54,791,900	43,220,100
Food products	737	673	37,194,200	27,562,400
Textile, cordage, etc.	224	153	12,276,300	9,719,300
Rubber working	41	27	3,122,500	1,445,500
Oil, mills, refineries	62	76	7,233,200	4,524,200
Central heating and power plants	112	112	132,723,700	95,442,500
Chemicals, pairts, etc	155	132	9,448,400	6,032,900
Mining, quarrying, etc.	189	179	19,517,500	14,935,900
Leather working	27	40	1,477,000	2,447,200
Glass working	20	23	1,710,800	3,781,000
Paper and pulp mills	84	73	6,693,000	4,904,200
Printing and binding	148	133	16,561,700	7,962,700
Woodworking	217	201	14,153,500	6,770,000
Totals	3,875	3,461	$387,355,500	$283,016,900

Data supplied by F. W. Dodge Corp.



STEEL FRAMING FOR THE LOCOMOTIVE ERECTING AND MACHINE SHOPS OF THE ILLINOIS CENTRAL RAILROAD BEING CONSTRUCTED AT PADUCAH, KY.



Operators of Merchant Change Tactics Economic

A NEW type of merchant blast furnace has been developed in the East. Located on the waterside, with docks for direct unloading of iron ore and for the shipment of pig iron by water, these furnaces also are linked with by-product coke oven plants. This article explains how the general eastern merchant pig iron industry, which has been through countless vicissitudes since the establishment of the first blast furnace at Lynn, Mass., in 1645, now is entering into a new phase of existence.—EDITOR.

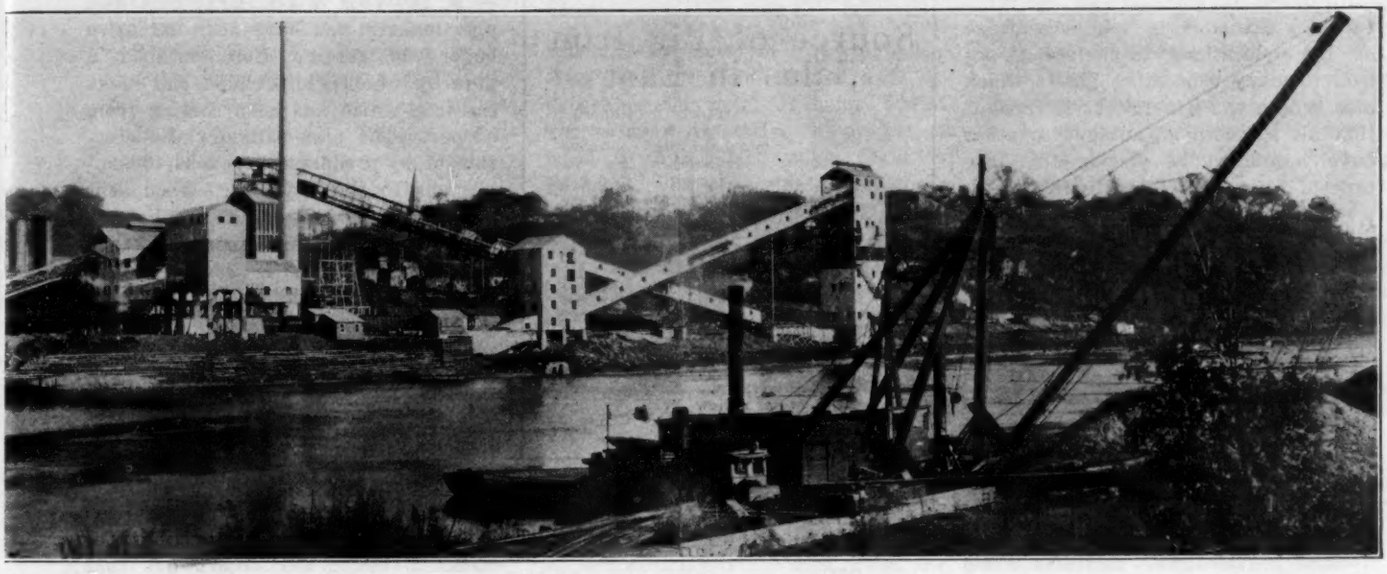
MANY years ago a leading Philadelphia pig iron man, renowned for his business ability and judgment, made a famous remark. Undoubtedly many others had made the same remark previously. It is definitely known that the same remark has been made since on many different occasions. This famous utterance substantially was to the effect that "the eastern merchant furnace is doomed to extinction."

The old gentleman who made this remark long has been dead and gone. Since then the merchant pig iron industry has been through many ups and downs. At various times the remark has been repeated. It has been repeated on numerous occasions since the war. The prophecy has been repeated during the past year. In fact, it has been stated within the last few weeks that the famous utterance never was more true than at the present time, and that the merchant furnace now is passing into extinction at a more rapid gait than before.

An examination of the history of the merchant pig iron industry in the East reveals that this is a history of vicissitudes. In the earliest Colonial times, furnaces were established in New England and New Jersey which obtained so-called bog ore from the bottoms of lakes and rivers. When the supply of bog ore became depleted the hey-day of these furnaces was found to have passed. All through the years furnaces have been built with promise of a roseate future. They have enjoyed a certain period of prosperity, after which they passed into oblivion. Charcoal furnaces were abandoned when their supplies of chacoal became exhausted. Many furnaces have been abandoned when nearby sources of iron ore were depleted. The introduction of anthracite as blast furnace fuel had a revolutionary effect. So did the introduction of coke. So did the various improvements in blast furnace design and construction which were developed from time to time.

It may be said right here that never at any time in the history of the business has there been so much decay among eastern merchant furnaces as in the years since the war. The war needs called for the greatest possible production of pig iron. Many furnaces which previously had given up the ghost took another lease on life. Many stacks that were slated for early oblivion were able to continue operating profitably because of the high pig iron prices made possible by the war emergency. Various explanations have been heard since the war as to why it was that this or that furnace got into financial troubles. But it is a fact that it is just the inexorable pressure of economic factors that has brought about a concentration in the abandonment of furnaces, that has been responsible for losses of many millions of dollars and that has been responsible for reiteration of the old remark, "The eastern merchant furnace is doomed."

And yet, despite all this chaos, despite all these great losses, there has been a quickening in the pulse of the merchant pig iron industry in the East which certainly does not



The photograph shows the complete establishment of the Hudson Valley Coke & Products Corp. at Troy, N. Y. This includes the blast furnace, the by-product coke ovens and the by-product recovery plant. It is a good illustration of a complete plant of the new merchant type

Blast Furnaces in East To Meet New Conditions

By E. C. Kreutzberg

corroborate the old prophecy. Why is it that millions of dollars have been spent in the last few years in making certain eastern merchant furnaces more efficient? Why is it that millions more are being expended in improving other furnaces and in erecting new ones? Why is it that plans are under consideration for the expenditure of additional millions and why is it that brand new blast furnace projects now are in the promotional stage?

Recent developments, in fact, indicate that the old affirmative statement ought to be put in another way. If it were put in the form of a question, "Is the eastern merchant furnace doomed?" It would seem that a safe reply would be "Not yet." Some of the best informed eastern blast furnace men go further and answer with a decided "No."

To get to the heart of the situation, it may be said that the furnaces in the East at present fall into three different groups.

One group comprises the old-fashioned merchant furnaces. They originally were located with respect to both raw materials and consuming territories. The great majority of them have been idle in recent years and some of them have deteriorated to such an extent that chances for their future operation seem slim. Some of these plants have to buy their fuel, some of them have to buy ore and some of them have to buy both. Prevailing high freight rates give them a big assembly cost which prevents them, under normal conditions, from competing against the more economical producers.

Another group comprises the eastern steelworks furnaces. The steelworks furnace became a factor in the merchant pig iron market some 15 years ago, and since has been increasingly regarded by strictly merchant interests as a kind of monster which gets its sustenance from gobbling up merchant furnaces. The main function of the steelworks furnace is the production of pig iron for the manufacture of steel. It is backed up by by-product coke ovens and usually by immense raw material reserves, carefully selected for their quality and for their availability at favorable transportation costs. The need for supplying certain quantities of gas require that a certain number of these steelworks furnaces be kept in blast at all times. When demand for steel is good, the steelworks furnace is not much of a competitor for pig iron, tending, in fact, to limit its bookings to the requirements of regular customers. When steel demand is in the doldrums, the steelworks furnace is hungry for business. It is estimated that the full advantage of the steelworks furnace as compared with the typical merchant furnace is as high as $4 to $5 a ton of pig iron.

The third group is something new. It comprises a new type of merchant furnace. This type came into being in 1925 and is regarded as already having passed the experimental stage. It is on this new type of merchant furnace that the eyes of the industry in the East are focused. It already is assured that this new development is going to have an increasing effect on the pig iron industry in the East. The outstanding feature of this new type of furnace is that it is so located that it can get iron ore direct by water, with minimum handling charges. The second outstanding feature is that it has its own by-product coke oven plant and thus derives full benefits from the valuable by-products, or that it has arrangements for obtaining its fuel from by-product operators who have their ovens practically next door. The

third outstanding feature is that these furnaces are able to take advantage of their locations in shipping pig iron to many consuming plants which also are on the water. It is thought that all of these advantages together have the effect of placing this new type of furnace in a position in which it can survive pig iron competition.

First of the furnaces of this group to get under way is that of the Delaware River Steel Co., which is on the Delaware river—right at the water's edge—at Chester, Pa. An old stack, the plant has been converted so as to derive full advantages from its tidewater location. The furnace has been enlarged and modernized. It has been equipped with an ore dock at which the largest ocean carriers can unload their cargoes. This dock is provided with facilities which permit minimum handling charges. Thus, the Chester furnace is so placed that there is entire flexibility in choosing ores from Africa, Spain, Sweden and other countries. The Chester furnace has an arrangement whereby it obtains its supply of coke from a public service company which operates a by-product coke oven plant adjacent to the furnace. The third advantage of the Chester furnace is that it can ship iron in barges to a number of important iron consuming plants which have their own docks on the Delaware river.

Another furnace in this class which is scheduled to go into operation in the spring of 1926 is that of the Hudson Valley Coke & Products Corp. The Tutein and other interests are enlarging and modernizing the old Burden furnace at Troy, N. Y. Adjacent to the stack, they built a by-product coke plant which was completed and placed in operation in October. The furnace is to operate entirely on domestic iron ore, which will be brought by barges from Port Henry and from the Lakes district to the furnace. From its dock, the furnace also is in a position to ship pig iron in barges to consumers located along the Hudson, on the banks of the barge canal, in New York harbor and along the Sound. This stack is particularly interesting because it years ago had left the active list of merchant pig iron producers. Its revival is entirely due to the tying up of pig iron production with by-product coke ovens and the utilization of water transportation facilities.

Source of Pig Iron Sales in East

	Imports	Steel works and merchant iron for sale*	Imported and domestic tonnage for sale
1915	107,400	1,566,355	1,673,755
1916	118,187	2,035,697	2,153,884
1917	118,251	2,184,349	2,302,600
1918	54,776	2,017,840	2,072,616
1919	101,665	1,582,800	1,684,465
1920	185,944	2,021,272	2,207,216
1921	44,842	815,869	860,711
1922	383,445	1,012,458	1,395,903
1923	367,778	2,101,244	2,469,022
1924	209,109	1,317,585	1,526,694
1925	420,000**	.....	.....

*Atlantic district, including Virginia, eastern Pennsylvania, Maryland, New Jersey and eastern New York.
**Estimated.

The third furnace in this new group is that of the Mystic Iron Works. This is now in process of construction on the Massachusetts coast near Boston. It may be said that in this case pig iron will be a by-product resulting from the big by-product coke oven capacity in New England.

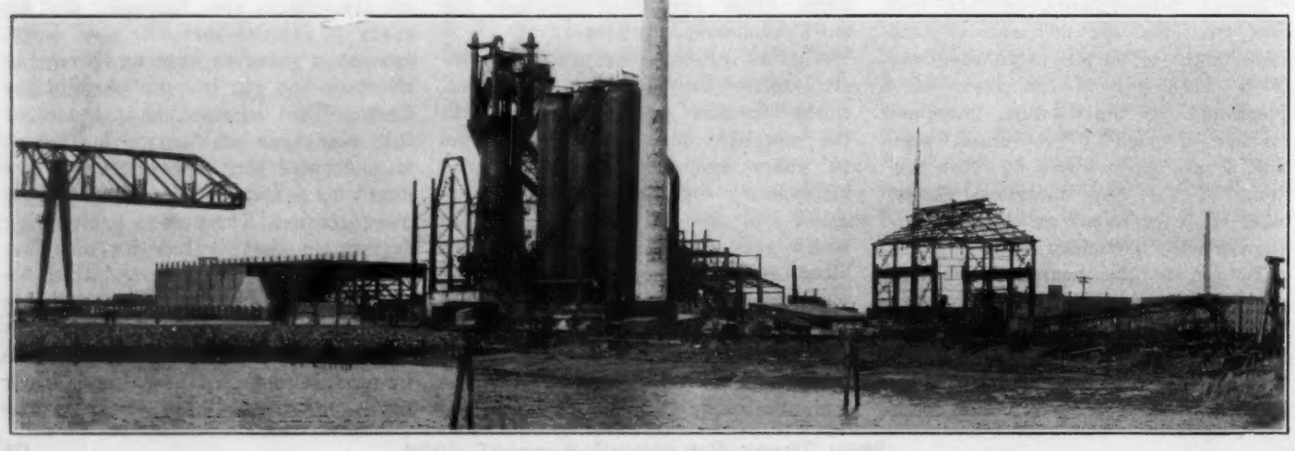
To such an extent has this new idea grown that the Philadelphia Foundrymen's association in November started to foster a movement to stimulate interest in the building of a blast furnace industry on the Delaware river in that city. Walter Wood, of R. D. Wood & Co., large cast iron pipe makers who have been extensive buyers of foreign iron, outlined a plan by which Philadelphia can make the iron which has been coming from abroad. The plan calls for the erection of by-product coke ovens to supply gas to the city. Mr. Wood sent out a questionnaire, the replies to which indicated that about 1,500,000 tons of pig iron is consumed annually in the Philadelphia district.

One argument being advanced in this campaign is that the imports during 1925, between 4,000,000 and 5,000,000 tons, meant a loss of business to the railroads of several millions of dollars, represented by the freights on materials that would have been transported if the iron had been made in this country. Those recommending the project point out that large tonnages of foreign ore right along come in through the port of Philadelphia, which thus is well equipped for this kind of traffic.

What is going to be done to enable the inland merchant furnaces to compete for pig iron business under normal conditions? It is freely admitted that present conditions of competition have put them in the fair-weather class.

The Warwick furnaces at Pottstown, Pa., for instance, have been landmarks for many years in the eastern pig iron industry. These furnaces have found it uneconomical to operate even though the Eastern Steel Co., which has them under lease, could use part of the furnace output in its own steelworks at Pottsville.

Replogle Steel Co. has two modern furnaces at Wharton, N. J., and fine iron ore mines nearby. It has not been operating the furnaces even though the requirements of its subsidiary, the Warren Foundry & Pipe Co., could consume half the output of one of these stacks. Like Eastern Steel Co., the Replogle Steel Co. has found it cheaper to buy iron in the market than produce at its



Mystic Iron Works, Everett, Mass., a Subsidiary of a Company Whose Principal Output is By-Product Coke

furnaces. Replogle also has a fine, modern furnace at Catasauqua, Pa.

Reading Iron Co. has been operating its Keystone furnace at Reading to supply the requirements of its puddling department. With Keystone about to go out of blast the company is preparing to light the rebuilt, modern furnace of its subsidiary, the Thomas Iron Co., at Hokendauqua, Pa.

In other words, the market conditions in pig iron and coke did not justify the Reading company in operating at Hokendauqua on merchant iron.

Just what is to be done to put these splendid furnaces in the competing class is a problem that now is approaching the point of being worked out. There is active a project to build a by-product coke plant at Wharton, with an arrangement whereby coke would be furnished to the Replogle furnaces there. There also is under consideration a project for building a by-product coke oven plant at Reading, where the Reading Iron Co. is located. There has been talk about building a by-product coke plant at Pottstown where the Warwick furnaces are located.

In view of the fact that certain merchant furnace operators at times have achieved conspicuous success in avoiding losses during periods when the market conditions have been adverse, some reference must be made to the importance of careful direction of the various parts of the merchant business. Aside from economical and efficient operation of the furnace

(*Continued on Page* 117)

Small Furnaces Suspend Operations

IN VIEW of changed economic conditions prevailing in the pig iron industry, the statement has been made that blast furnaces having capacities of 8000 *gross tons or less per month have a gloomy future. To throw further light on this subject,* IRON TRADE REVIEW *has checked back over its pig iron production records since the close of the war and has compiled some pertinent facts.*

Serviceable blast furnaces in the United States using coke fuel were listed as 385 *at the close of* 1925. *Of this number* 119 *furnaces, operated at* 88 *plants, have a rated capacity of* 8000 *tons or less per month. Classified according to production,* 95 *furnaces are merchant,* 17 *are nonmerchant or steelmaking, and* 7 *are merchant and nonmerchant. As to location,* 35 *are in Pennsylvania,* 21 *in Alabama,* 17 *in Virginia,* 14 *in Tennessee,* 11 *in Ohio;* 6 *in New York,* 6 *in Kentucky,* 3 *in Wisconsin,* 2 *in New Jersey,* 2 *in West Virginia,* 1 *in Minnesota and* 1 *in Texas.*

During the past year 27 *blast furnaces were removed from the serviceable list, while but one new stack was added. The names of these furnaces, their location, their operating companies and monthly capacities are shown in the tabulation below. It is interesting to note that* 21 *furnaces of the* 27 *abandoned had monthly capacities of* 8000 *tons or less while only* 6 *had capacities in excess of* 8000 *tons.*

As stated, the country's 119 *blast furnaces of less than* 8000*-ton capacity are operated at* 88 *plants. A study of production records reveals that only a little more than half, or* 48 *of the* 88 *plants, have been active either full time or part time in the last two years. Of the remaining* 40 *plants, two have not operated since* 1913, *while* 38 *suspended operations at various times between the close of* 1918 *and beginning of* 1924. *The suspensions were heaviest in* 1923 *with* 16 *and second in* 1920 *with* 10. *During* 1924, *eight plants blew out or banked their stacks and have remained inactive since.*

Company	Furnace	Location	Monthly capacity gross tons
Bethlehem Steel Co.	Cambria A	Johnstown, Pa.	12,850
Bethlehem Steel Co.	Steelton No. 2	Steelton, Pa.	8,000
Carnegie Steel Co.	Zanesville	Zanesville, O.	4,150
Longdale Iron Co.	Longdale No. 1	Longdale, Va.	1,500
Longdale Iron Co.	Longdale No. 2	Longdale, Va.	1,800
Republic Iron & Steel Co.	Atlantic	New Castle, Pa.	10,000
Woodstock Operating Corp.	Woodstock A	Anniston, Ala.	4,375
American Steel & Wire Co.	Schoenberger No. 1	Pittsburgh	6,850
American Steel & Wire Co.	Schoenberger No. 2	Pittsburgh	6,850
Eagle Furnace Co.	Attalla	Attalla, Ala.	1,000
Rome Furnace Co.	Rome	Rome, Ga.	2,000
Woodstock Operating Corp.	Woodstock B	Anniston, Ala.	4,375
Youngstown Sheet & Tube Co.	Iroquois No. 1	South Chicago, Ill.	11,000
Colorado Fuel & Iron Co.	Minnequa	Pueblo, Col.	13,800
Thropp, Joseph E., Co.	Saxton No. 1	Saxton, Pa.	3,100
Thropp, Joseph E., Co.	Saxton, No. 2	Saxton, Pa.	3,100
American Steel & Wire Co.	Emma	Cleveland	10,500
Carnegie Steel Co.	Columbus, No. 1	Columbus, O.	7,900
Carnegie Steel Co.	Columbus, No. 2	Columbus, O.	7,900
Georgia Steel Co.	Rising Fawn	Rising Fawn, Ga.	6,000
Tonawanda Iron Corp.	Niagara B	No. Tonawanda, N. Y.	7,500
Mudge, E. W., & Co.	Ella	West Middlesex, Pa.	6,750
Republic Iron & Steel Co.	Hannah	Youngstown, O	10,000
Spring Valley Iron & Ore Co.	Spring Valley	Spring Valley, Wis.	2,900
Sloss-Sheffield Steel & Iron Co.	Clifton No. 2	Ironton, Ala.	4,100
Carnegie Steel Co.	Niles	Niles, O	8,000
Carnegie Steel Co.	Steubenville	Steubenville, O.	5,750

1926 Begins Well

60.5 Per Cent of Country's Blast Furnaces Now In Operation With December Gain—Tonnages Moving a Little More Freely

THE opening week of the new year finds the iron and steel market slightly more active and works operations resuming full swing after recent holiday interruptions. Specifications which were under check for inventory reasons are recovering their former activity. Finished steel sales at Chicago last week were the heaviest of any week of the year.

Pig iron production rounded out 1925 with distinction, with a gain in December of 4.4 per cent over November. The daily average was 105,203 tons against 100,775 tons in November and the gross output 3,261,290 tons compared with 3,023,257 tons. Production in December registered 84.3 per cent of the highest monthly mark in history, that of May, 1923. Complete figures for December show 60.5 per cent of the country's total number of blast furnaces in operation at the yearend. This was brought about by a gain of 13 stacks lifting the active list to 233.

A new inquiry for 2000 cars from the Union Pacific and awards of 800 cars by the Illinois Central and of 500 cars by the Mobile & Ohio are the important items of the week's railroad news.

The conflicting elements present in the sheet bar market have again come to the surface the past week. A sale of 9000 tons of open-hearth bars for first quarter delivery was made to a Northern Ohio consumer whose location is in competitive Youngstown and Pittsburgh territory at $38, Pittsburgh. Against this another transaction of 3000 tons of bessemer bars in which a consumer just outside Pittsburgh figured, was made at $36, Pittsburgh, it is reported. As previously noted, slabs in round tonnages have been sold at $38, Cleveland, and this week a smaller lot to Chicago territory brought $40, Cleveland mill.

Structural activity is experiencing a slight letup from the heavy awards of November and December. Many projects are beginning to appear for spring construction. Awards of the past week involved a dozen or more projects of 1000 tons or over.

The first week of the year has seen a slight rise in IRON TRADE REVIEW composite of 14 leading iron and steel products to $39.26. This stands against $39.24 one week ago and $40.92 one year ago.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Jan. 6, 1926	Dec., 1925	Oct., 1925	Jan., 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$22.76	22.76	21.56	24.56
Basic, valley	20.00	20.00	18.80	21.80
Basic, eastern del., eastern Pa.	23.00	23.00	20.50	24.25
*No. 2 foundry, del., Pittsburgh	22.26	22.26	22.16	23.91
No. 2 foundry, Chicago	23.00	23.00	21.60	23.80
*Southern, No. 2, Birmingham	22.00	21.60	19.50	20.00
*Southern Ohio, No. 2 Ironton	21.50	21.10	19.60	22.00
**No. 2X, Virginia furnace	24.00	23.80	23.00	24.50
**No. 2X, eastern, del. Phila.	23.76	24.26	22.61	25.61
Malleable, valley	20.50	20.50	19.35	22.20
Malleable, Chicago	23.00	23.00	21.60	23.80
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	21.76	21.76	20.46	23.66
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	4.50	4.00	5.65	4.10
Connellsville foundry, ovens	5.50	5.10	5.95	5.10
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	38.00	36.60	35.00	39.20
Sheet bars, open-hearth, Pittsburgh	38.00	36.60	35.00	39.20
Billets, open-hearth, Pittsburgh	36.00	35.20	35.00	37.80
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.32	2.32	2.27	2.32
Iron bars, Philadelphia	2.22	2.22	2.12	2.28
Iron bars, Chicago, mill	2.00	2.00	1.90	2.00
Beams, Pittsburgh	1.90	1.95	1.90	2.10
Beams, Philadelphia	2.17	2.17	2.17	3.02
Beams, Chicago	2.10	2.10	2.10	2.20
Tank plates, Pittsburgh	1.90	1.90	1.80	2.20
Tank plates, Philadelphia	2.12	2.07	2.02	3.02
Tank plates, Chicago	2.10	2.10	2.10	2.20
Sheets, black, No. 28, Pittsburgh	3.35	3.35	3.10	3.55
Sheets, blue anl., No. 10, Pittsburgh	2.50	2.50	2.25	2.07
Sheets, galvanized, No. 28, Pittsburgh	4.60	4.60	4.25	4.75
Sheets, black, No. 28, Chicago	3.50	3.50	3.35	3.75
Sheets, blue anl. No. 10, Chicago	2.65	2.65	2.45	2.85
Sheets, galvanized, No. 28, Chicago	4.75	4.75	4.45	4.90
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago	2.70	2.70	2.70	3.00
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	19.00	19.00	18.40	22.10
Heavy melting steel, eastern Pa.	17.50	17.60	17.00	20.00
Heavy melting steel, Chicago	15.25	15.50	16.25	19.45
No. 1 wrought, eastern Pa.	18.75	18.75	18.25	21.50
No. 1 wrought, Chicago	15.00	15.40	16.30	19.15
Rails for rolling, Chicago	17.75	18.55	18.55	20.95

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Jan. 6, 1926)	$39.26
Last week (Dec. 30, 1925)	39.24
One month ago (December, 1925)	39.14
Three months ago (October, 1925)	37.61
One year ago (January, 1925)	41.02
Ten years ago (January, 1916)	33.66
Twelve years ago (January, 1914)	23.03

General Market Situation Firm and Active

BLAST furnace interests begin the new year under market conditions similar to those that prevailed one year ago, with well filled order books, good shipments, strong prices and prospects of early resumption of buying. Prices are not quite so high as those quoted at the outset of 1925, as foundry and malleable irons now are available at $20.50 to $21 base, valley, compared with $22 to $23, while bessemer is $21, valley against $22.50 to $23 a year ago. At Chicago the current market is $23, furnace, for No. 2 foundry iron, 50 cents less than in the opening week of 1925.

After the holidays more inquiries have come to furnaces. Some conservative buyers are sounding out the market with a view to placing additional tonnage for first quarter. Two buyers have increased their first quarter commitments with an Ohio furnace interest 50 per cent. Sales in eastern territory during the past week increased to an aggregate of 6000 tons; those reported by furnace interests with headquarters at Cleveland totaled 4500 tons. December sales by furnaces in the Chicago district were as heavy as those in November.

A slightly easier tone has developed in eastern Pennsylvania foundry iron. The 1.75 to 2.25 silicon grade has

sold at $22.50 eastern Pennsylvania furnace, or 50 cents under the recent minimum. However, there has been no shading on the higher silicons. The Buffalo market for shipments to eastern districts appears to be $21.50 to $22, base furnace, but is not clearly defined. Buffalo district merchant furnace interests are seeking to establish a $22 base for first quarter iron, in the face of lower quotations by combined furnace and mill interests. Furnace operations are at the highest point of months in the Buffalo district with six furnaces in operation.

Average selling prices of basic and bessemer iron for December as compiled by W. P. Snyder & Co. were $20 and $21, respectively, compared with $19.81 and $20.89 respectively, for the preceding month.

Coke Shipments Brisk

WITH a much larger portion of the coke output than usual going into domestic channels and for other industrial purposes generally using anthracite, weather conditions from week to week are exerting a stronger influence on the market. Milder weather conditions in the last part of the closing week of the year have softened the market for by-product fuel. Rumors of an impending settlement of the anthracite strike also are exerting an influence on beehive coke, and new demand is less active. Connellsville makers quote furnace coke at $4.50 to $5 for first quarter, and $5.50 for spot delivery. Foundry coke is held at $6 to $6.50. Shipments of all grades of coke are brisk.

Ferroalloys Are Firm

FERROALLOYS begin the new year with a firm tone. Spiegeleisen consumers are under contract for the first half or first quarter and are taking all of the present production. The market is unchanged at $34, furnace for 20 per cent. Contrary to the usual condition a good many consumers still are uncovered on their forward ferromanganese requirements. Therefore, an improvement in buying of this metal before long is expected. The market continues $115, duty paid tidewater.

Special ferroalloys are in strong markets but with little change in prices. Ferrotungsten is $1.12 to $1.18 a pound contained, domestic producers generally asking around the latter price. Tungsten ore is strong, $12 to $12.50 a short ton unit of wolframite. Most contracts have been made for 1926 in chrome and silicon and some in vanadium.

Plate Market Steady

AN EXPANDING market for plates is in prospect, with most makers' order books now of generous proportions. It is expected that car placements by western roads will be heavy in the early part of this quarter and that fully 200,000 tons of heavy finished steel, largely plates, will be developed from this source. Chicago car builders continue to specify heavily for plates against orders taken 30 and 60 days ago, but their new business is not large at present. Eastern railroads have indicated larger requirements for 1926. Miscellaneous business is keeping mills fairly active. Two lake vessels that were pending, for which around 10,000 tons of plates were figured, have been abandoned. Prices range from 1.80c to 1.90c, Pittsburgh.

Rail Equipment Active

UNSEASONAL interest is being shown in the railway equipment market. Instead of being slack, rail mills are being speeded up to meet the aggregate requirements of many miscellaneous small orders. Frugal purchases early in 1925 by railroads have caused them to need material immediately. Track fastenings also are unusually active. Light rail buying continues restricted to small tonnages. Santa Fe closed on 15 locomotives. Prospective locomotive buying is heavy. Car awards of the week are featured by 800 divided by the Illinois Central between Standard Steel Car Co. and Pullman Car & Mfg. Corp., and 500 automobile cars by Mobile & Ohio to American Car & Foundry Co. Union Pacific features inquiry with figures requested on 2000 freight cars, including 100 tank cars previously noted as pending. Chicago & Northwestern placed 250 ballast cars with Rodger Steel Car Co.

Shape Prospects Bright

PROSPECTIVE work in the structural market is unusually heavy for January, pending tonnage being at a new high mark in Chicago. Although small contracts continue to constitute the bulk of the market more large tonnages are being placed. Plain material prices continue 1.90c to 2.00c Pittsburgh equivalent. Among the larger contracts placed during the past week were 3600 tons for an addition to Weirton Steel Co., Weirton, W. Va., and 1150 tons for the Maccabee's temple at Detroit, both going to American Bridge Co. George H. Flynn is low on the general contract for a subway section in New York taking 2800 tons. A Bricken apartment in New York took 1000 tons, Hay Foundry & Iron Works getting the contract. Activity in the Cleveland district centers around the tower building of the new union station taking about 15,000 tons on which bids go in Jan. 20.

Bar Mills Well Booked

BUYING of soft steel bars continues undisturbed by holidays. Tonnage flowing to mill books in heavy and shipments are at a record pace for the season. Demand is widespread and prospects for continued heavy sales are good. Rail steel buying is fair, and at Chicago one mill is booked into February. Bar iron prices are unchanged. Demand is active at Pittsburgh for soft steel bars where 2.00c continues the going market. Chicago sellers hold firm at 2.10c, Chicago. A firmer tendency is noted in rivets, concessions having disappeared at New York. Bolts and nuts are featured by a sale of six carloads by Lake Erie Bolt & Nut Co. Although prices are unchanged at the levels of the last six months, rumors of advances are more numerous.

Tin Plate Orders Large

ORDERS for tin plate in the hands of producers assure attractive operating schedules for first half, providing all tonnage is specified. The domestic price is firm at $5.50 per base box, Pittsburgh. Most canmakers have covered for first half requirements and while producers are in a position to accept additional business for late shipment in this half, the mill schedules invite no large tonnages.

Semifinished Strong

INCREASING strength continues to feature the market for semifinished material as users seeking to cover

their requirements find the majority of mills booked full for first quarter. One recent sale of sheet bars involves 9000 tons for the first quarter, the price applying on that portion to be shipped in January being $38, Pittsburgh, and for the remaining two months prices as quoted by trade papers. This tonnage goes to a buyer in northern Ohio in competitive Pittsburgh and Youngstown territory. Despite the generally higher price situation a consumer last week obtained 3000 tons of sheet bars from an Ohio producer at $36, Pittsburgh. Within the last two weeks 20,000 tons of standard slabs have been sold at $38, mill, or $38, Pittsburgh. Around 700 tons of standard slabs have been booked for delivery in the first quarter to a Chicago consumer by a northern Ohio mill interest, the delivered price being around $45.

Sheets Active, Firm

THE new year starts with prices on all grades of sheets firm, orders coming in at a satisfactory rate and mill operations continuing on a high plane. Practically all of the sheets booked at the lower prices for fourth quarter delivery have been shipped out, and the new levels on business for the first quarter are established as follows: Blue annealed 2.50c, black 3.35c; galvanized 4.60c and full finished 4.50c. Mills in the Pittsburgh and Youngstown districts maintain these prices. While demand for full finished sheets has been good, some of the large buyers are yet to cover their requirements for first quarter.

Western sheet mills continue operating practically at capacity and even so business is backing up slightly. Consumers display greater inclination to specify and recent order mail has been heavy. The market is holding at 3.50c, Chicago, for black sheets, 4.75c for galvanized and 2.65c for blue annealed.

Scrap Closes Weak

QUIET, extending to weakness in some centers, marks the iron and steel scrap market at the end of the year. Offering of the Pennsylvania railroad list of 33,202 tons and a supplementary list of 2900 tons, blankets the eastern half effectually. At Chicago consumers have heavy stocks but elsewhere better buying is expected to replace reserves. Little buying is being done in any market and prices are slack. Heavy melting steel has been bought at $15.50 at Chicago while in the East $18 has been done on small lots, with dealers asserting $19 would be the minimum on a substantial tonnage. Prices are substantially unchanged, with a few declines of 25 to 50 cents per ton.

Talk Wire Advance

WIREMAKERS are beginning to receive releases of considerable tonnages of wire and nails entered for delivery after Jan. 1 and operation is picking up materially. Talk still is heard of an advance shortly but sufficient business has not yet been booked to make this possible. The quotation at Chicago or western mill is 2.55c for plain wire and 2.70c for nails.

Pipe Starts Slowly

RESUMPTION of buying by pipe jobbers to replenish depleted inventories is expected to increase bookings of mills. Operations continue steady at 60 to 70 per cent of capacity. Better conditions in the oil market leads pipe mills to believe line pipe demand will be heavier shortly. Cast iron pipe buying has been unusually heavy recently and makers' shops are in good condition. Order books of Chicago makers are heavy for February and March delivery. Prices continue unchanged at $42 Birmingham equivalent on 6-inch pipe. No action has been taken as yet by Fort Worth, Tex. on award of 7500 tons of 6 to 24-inch pipe for which B. Nicoll & Co., representing French makers was low.

Concrete Needs Heavy

FEATURED by exceptionally good demand in the Chicago district, concrete bar buying is unusually heavy. Mill specifications are good, jobbers replenishing stocks depleted for inventories. Awards for definite jobs involve small tonnages, but the aggregate being placed is good. Demand in the New York district is active and several large tonnages are pending. In northern Ohio two projects involve 4800 tons. Award of 1000 tons for footings for a telephone building at Cleveland may be tied up in dispute over the general contract letting. Prices show no change and in most centers are firm.

Machine Buying Heavy

GOOD buying of equipment featured the closing week of the year and prospects appear bright for the early part of 1926. Railroad buying is more active. Illinois Central has just issued a list of over 125 tools for its shops at Paducah, Ky., and the Santa Fe has closed on equipment totaling about $30,000. Among other roads expected to come into the market are the Boston & Maine, Boston & Albany, Florida East Coast, New York Central and Pennsylvania. Otis Elevator Co., New York, is equipping a new motor shop and among its purchases of the last few days were 14 cranes. Automobile manufactures continue heavy ordering. Demand for used equipment is steady.

By-Products Active

PRODUCTION of solvent naphtha and toluol is improving, but deliveries are still being deferred three weeks to a month. Benzols are available within a week to 10 days. Prices on distillates are unchanged.

Although demand for sulphate of ammonia is slack, the market is unchanged at $2.80 to $2.85, delivered, for domestic account and $2.70 to $2.75, port, in double bags, for material for export. Phenol is steady at around 22 cents works, and naphthalene at 6 to 7 cents works, and 7½ to 8 cents, for balls. Inquiry for naphthalene gives promise of brisk activity after the first of the year.

Metals Show Strength

NONFERROUS metals are steady to strong. Tin and lead have been going up after recent easiness and neared their top prices of 1925. Antimony is selling at the highest prices since the war period, 24.00c. Copper and zinc have changed little in the past week, with buying light but shipments to domestic users continue large. Copper is about 14.12½c delivered, with most producers firm though a little was heard about possible shading. Prime western zinc has sold at 8.75c East St. Louis, with futures ranging 10 to 30 points down. Spot tin sold close to 64.00c. Lead sold as high as 9.35c, New York, for February.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$36.00 to 38.00
Pittsburgh, bessemer	36.00 to 38.00
Youngstown	36.00 to 38.00
Philadelphia	40.30 to 41.30
Chicago	35.00
Forging, Pittsburgh	40.00 to 41.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh	$38.00
Youngstown	38.00

SLABS

Pittsburgh	$38.00
Youngstown	38.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅜-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	1.96c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.90c to 2.00c
Philadelphia	2.07c to 2.12c
New York	2.09c to 2.14c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.32c to 2.42c
New York, soft steel	2.34c to 2.44c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill rail steel	1.80c to 1.90c
Philadelphia, common iron	2.22c
New York, common iron	2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c to 2.50c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass., Chicago	4.05c to 4.15c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.60c to 4.75c
3100 (Nickel chromium)	3.60c to 3.65c
6100 (Chrome vanadium)	4.40c to 4.50c
6100 (Chrome vanad. spring)	3.85c to 4.00c
9250 (Silico-mang. spring)	3.30c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar prices; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill g.t.	36.00 to 38.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28. Pittsburgh base	3.35c
No. 28. Philadelphia, delivered	3.67c
No. 28. Gary, Indiana Harbor	3.45c
No. 28. Chicago delivered	3.50c

TIN MILL, BLACK

No. 28. Pittsburgh	3.35c
No. 28. Gary base	3.45c

GALVANIZED

No. 28. Pittsburgh base	4.60c
No. 28. Philadelphia, delivered	4.92c
No. 28. Gary, Indiana Harbor	4.70c
No. 28. Chicago, delivered	4.75c

BLUE ANNEALED

No. 10. Pittsburgh base	2.50c
No. 10. Philadelphia, delivered	2.82c
No. 10. Gary, Indiana Harbor	2.60c
No. 10. Chicago, delivered	2.65c

AUTOMOBILE SHEETS

No. 22. Pittsburgh base	4.50c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher.

Long ternes, base	4.85

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$54.20
Six-inch and over, Chicago	50.20
Four-inch, Birmingham	46.00 to 47.00
Six-inch and over, Birmingham	42.00 to 43.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, 5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bold ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off
Stove bolts, 80, 10 and 5 off plus 2½ off in bulk.	
Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-in. and smaller Pittsburgh, Cleveland	70 and 10 off
**Rivets, 7/16 in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts. dist.	6.25 off
Lock Washers, f.o.b. factory	85 off

British Iron Rises

Due To Advance in Coke, and Melters Rush To Buy

London, Jan. 5. — (*By Cable*) — Prices of Middlesbrough pig iron have advanced two shillings due to a rush of melters to place orders, following depletion of their stocks and a rise in coke values. Restarting of more furnaces, however, is not expected in the near future.

British steelworks have closed for one week for repairs and inventories, are expected to operate fully next week. The London, Midland & Scottish railroad is anticipating an expenditure of £10,000,000 ($48,500,000) for equipment and improvements. Steel prices are firmer. Markets for galvanized sheets and tin plate are quiet; mill order books are well filled.

A report from Paris states export and domestic demands for pig iron are heavy. Domestic iron and steel prices are rising due to the active export business. Markets in Belgium are quiet.

The Skoda Works, Czechoslovakia, has obtained an order for a sugar mill for British interests.

East Is Buying Scrap

Philadelphia, Jan. 5.—Eastern Pennsylvania steel mills, not including Bethlehem, have bought fully 25,000 tons of steel scrap in the past week at $18 delivered. Good tonnages of cast scrap also have been bought and considerable tonnages of blast furnace borings. Bethlehem has bought an unnamed tonnage known to be large.

Buys Sintering Machine

The Reading Iron Co. has decided to install a sintering machine at its Keystone furnace at Reading, Pa. The machine will be of the Dwight-Lloyd type and engineers now are arranging the layout. It is expected that the installation will be made within the next three or four months. The plant will be used for sintering magnetic concentrates from the Richard mine of the Thomas Iron Co. at Wharton N. J., and for sintering flue dust.

Increases Bar Capacity

Improvements planned for 1926 by the Illinois Steel Co. include a 40-inch reversing blooming mill at its South works and one 9-inch and one 10-inch merchant mill, with a combined annual capacity of 200,000 tons of merchant bars, at its Gary works. The alloy steel bar mill at South works, having an estimated capacity of 180,000 tons, should be completed in 1926.

Improvements made in 1925 at the South works embraced a general sanitary sewage system and a gas driven electric generating unit of 4000 kilowatt capacity. At Gary 140 by-product coke ovens, a pumping station with a daily capacity of 80,000,000 gallons of water, and a steam turbo-electric generating plant of 30,000 kilowatt capacity were added.

Bills Introduced To Draft Industry in War

Washington, Jan. 5.—Indications are that congress in this session will pass the Capper-Johnson bill to draft industry in war emergency. Assurance has been given the sponsors that hearings before the house military affairs committee will be arranged within the next few weeks.

Representative Royal Johnson, of South Dakota, has introduced the bill in the house for the American Legion, which has placed it at the head of its legislative program. Senator Capper, of Kansas, who has offered the bill in the senate, said he intends to arrange for early hearings before the senate military committee.

More Steel Mills To Be Built in South, Report

Birmingham, Ala., Jan. 4.—A. H. Woodward, chairman of the board, Woodward Iron Co., in a talk to the company's superintendents recently stated his company untimately will build a steel plant. No definite time has been set for this development he said. There is some talk of another iron and steel company building a steel mill at its Birmingham properties. These reports have come out lately, in addition to the plan already announced for the Sloss-Sheffield Steel & Iron Co. for development of its properties here insluding the rebuilding and enlarging two of its blast furnaces.

Nonbessemer Ore 65 Per Cent of Lake Total

About 65 per cent of all the iron ore shipped from the Lake Superior district in 1925 was of the nonbessemer grade, the Lake Superior Iron Ore association reports. The tonnage of this ore was 34,842,917 of the total 53,540,502 shipped by the lake route. The Mesabi range contributed 24,155,458 tons to the total of the nonbessemer grade, or nearly 70 per cent of the tonnage. The total output of all grades from the Mesabi range was 35,170,391 tons.

The bessemer iron ore output in the Lake Superior district in 1925 was less than half of the total nonbessemer, specifically, 15,004,301 tons. The amount of manganiferous ore was 2,155,060 tons; silicious 1,075,248 and aluminous 462,976 tons. A more complete statement of analyses of the various grades of ore shipped will be issued later.

Plans Four Open Hearths

Pittsburgh, Jan. 5.—Contracts for four additional 100-ton open-hearth furnaces will be let shortly by the Weirton Steel Co., Weirton, W. Va. When completed this will give the company a complement of eleven 100-ton basic open-hearth furnaces. Structural steel for the extension of the steel mill building was let this week to the American Bridge Co. and involves 3600 tons.

Mill Wages Unchanged

Youngstown, Jan. 4.—Soft steel bar prices were found unchanged in the November-December period at 1.95 at the bi-monthly examination of sales held by James H. Nutt, secretary of the Western Bar Iron association and a committee representing the Amalgamated Association of Iron, Steel and Tin Workers.

As the result puddlers wages will remain unchanged at $11.13 per ton in the January-February period. Mill crews working under Amalgamated agreements will also retain present wages.

Shipments Are High

Youngstown, Jan. 4.—Despite the holiday season Trumbull Steel Co. shipped 40,600 tons of finished products in December, maintaining the above 40,000-ton records started in October.

The Youngstown Sheet & Tube Co. steel shipments, exclusive of pig iron, are estimated at about 150,000 tons for December, practically the same rate as maintained in October, November and in January, 1925.

Two Furnaces Resume

Youngstown, Jan. 4.—Active blast furnace list was boosted to 28 out of 42 with a 72 per cent of the rated iron capacity of the Youngstown district with the resumption of No. 2 Hubbard stack of Youngstown Sheet & Tube Co. Jan 1 and the Anna stack of Struthers Furnace Co. this week. The Struthers furnace is being operated by Receiver H. W. Grant and has sold so far about 25,000 tons of pig iron, mostly of foundry grade at $20.50 and some basic at $20.

Active Furnaces at 60 Per Cent

Complete December Figures Disclose Gain of 13 Stacks and a Tonnage Increase of 4.4 Per Cent—Total Output Is 3,261,290 Tons Compared With 3,023,257 Tons in November

CONTINUING the gain of the past four months, production of coke pig iron in the United States in December rose to the second highest rate for any December in history, being exceeded only in 1918. Blast furnace operations improved during the month with 13 additional stacks resuming and indications are that at least a dozen more will blow in early in January. Furnaces in blast Dec. 31 for the first time since March reached 60 per cent, the exact figure being 60.5 per cent.

Pig iron produced in December totaled 3,261,290 gross tons, a gain of 238,033 tons over the 3,023,257 tons of November. Total production for all 1925 aggregated 36,382,637 tons as against 31,076,572 tons in 1924. This was the sixth highest annual output on record.

On an average daily basis the output of December was 105,203 tons per day which, compared with the 100,775 tons per day of the preceding month, was an increase of 4428 tons or 4.4 per cent. November showed an improvement of 3.3 per cent over October. The record December rate of production was in the last month of 1918 with 110,778 tons per day. In December pig iron was made at the rate of 38,450,000 tons per year against an indicated annual rate of 36,700,000 tons in October and represented 84.3 per cent of the record production of 124,790 tons per day in May, 1923.

Merchant iron in December amounted to 672,049 tons, a gain of 33,835 tons over the 638,214 tons of November. On a daily basis this represented 21,679 tons in December and a gain of 405 tons per day over the 21,274-ton daily rate of November. Nonmerchant or steelworks iron with 2,589,241 tons showed an increase of 204,198 tons over the 2,385,043 tons of November. Reduced to a daily basis, nonmerchant iron represented 83,524 tons per day, a rate which was 4023 tons better than the 79,501-ton rate of the previous month.

Blast furnaces operating on Dec. 31 totaled 233, or 13 more than were active on Nov. 30. During the month six merchant furnaces were blown in and none blown out or banked. Of the nonmerchant class, 9 were blown in and 2 blown out, the net gain being 7 stacks. Of the total active on the last day of the month, 59 were merchant and 174 were nonmerchant. The corresponding figures for November were 53 and 167.

Furnaces blown in during December were: In Ohio: Youngstown No. 1, Youngstown Sheet & Tube Co.; River No. 3, McKinney Steel Co.; Cleveland No. 2, Otis Steel Co. In Pennsylvania: one Isabella, one Carrie, one New Castle, Carnegie Steel Co.; Clinton, Clinton Iron & Steel Co.; Robesonia, Robesonia Iron Co.; Hokendauqua, Thomas Iron Co. In New York: One Susquehanna, Rogers-Brown Iron Co.; Lackawanna A and F. Bethlehem Steel Co.; Port Henry No. 2, Witherbee-Sherman Co. In Kentucky, Ashland No. 2, American Rolling Mill Co. In Indiana: Gary No. 10, Illinois Steel Co.

Stacks blown out during the month were: In Pennsylvania: One Duquesne, Carnegie Steel Co.; Bethlehem A, Bethlehem Steel Co.

MONTHLY PRODUCTION

	1925	1924	1923
January	3,372,207	3,015,480	3,228,226
February	3,214,067	3,073,619	2,993,918
March	3,571,422	3,465,389	3,523,595
April	3,211,235	3,226,107	3,546,308
May	2,933,907	2,619,986	3,868,486
June	2,679,045	2,022,836	3,667,868
Total 1st half	18,981,883	17,423,417	20,828,401
July	2,665,262	1,783,457	3,684,677
August	2,707,171	1,882,986	3,448,886
September	2,725,885	2,053,617	3,117,526
October	3,017,889	2,461,727	3,142,642
November	3,023,257	2,514,979	2,891,191
December	3,261,290	2,956,389	2,912,527
Total 2nd half	17,400,754	13,653,155	19,197,449
Grand total	36,382,637	31,076,572	40,025,850

Active Blast Furnaces

	In blast	Total	Per Cent
December	233	385	60.5
November	220	385	57.2
October	209	386	54.1
September	200	387	51.6
August	192	391	49.2

AVERAGE DAILY PRODUCTION

	1925	1924	1923	1922	1921
Jan.	108,781	97,273	104,136	53,090	77,895
Feb.	114,788	105,987	106,925	58,220	68,906
Mar.	115,207	111,787	113,664	65,674	51,447
Apr.	107,041	107,537	118,210	69,005	39,691
May	94,642	84,515	124,790	74,495	39,202
June	89,301	67,427	122,262	78,748	35,466
July	85,976	57,531	118,860	77,517	27,892
Aug.	87,328	60,741	111,254	58,408	30,802
Sept.	90,862	68,454	103,917	67,466	32,859
Oct.	97,351	79,410	101,375	84,827	39,821
Nov.	100,775	83,832	96,373	94,870	47,165
Dec.	105,203	95,367	93,952	99,468	52,992
Ave.	99,678	84,908	109,659	73,563	45,223

DIVISIONS OF PRODUCTION

1924	Merchant	Non-merchant	Spiegel	Ferro-manganese	Other ferro
Jan.	707,710	2,307,770	7,948	19,735	.....
Feb.	679,700	2,393,919	9,870	22,262	.....
Mar.	712,321	2,753,068	13,794	22,350	.....
Apr.	708,151	2,517,956	4,240	23,580	163
May	648,656	1,971,330	9,336	21,663	763
June	551,408	1,471,428	9,410	20,563	779
July	468,780	1,314,677	15,328	11,927	765
Aug.	465,059	1,417,927	8,010	7,654	760
Sept.	518,017	1,535,600	5,033	7,255	593
Oct.	607,717	1,854,010	10,047	7,780	822
Nov.	605,438	1,909,541	8,835	13,429	870
Dec.	634,726	2,321,663	5,284	21,220	904
Total	7,307,683	23,768,889	107,135	199,418	6,419
1925					
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
Mar.	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	588,330	2,118,841	4,940	18,818	.....
Sept.	569,219	2,156,666	5,162	18,381	140
Oct.	606,092	2,411,797	5,071	21,472	1,544
Nov.	638,214	2,385,043	6,370	27,202	1,665
Dec.	672,049	2,589,241	7,756	26,043	1,883
Total	7,598,891	28,783,746	65,757	260,311	9,010

DECEMBER PIG IRON

	No. of Stacks	No. in blast last day of month Dec.	Nov.	Total tonnage made Merchant	Nonmerchant	—Totals— Dec.	Nov.
Pennsylvania	136	85	81	124,715	1,052,326	1,177,041	1,029,151
Ohio	71	48	45	127,846	619,890	747,736	709,190
Alabama	38	26	26	121,387	133,920	255,307	234,879
Virginia	17	1	1	4,100	.....	4,100	5,113
New York	26	17	13	77,911	115,937	193,848	176,600
New Jersey	4	0	0	.....	.....	.....	.....
Illinois	25	16	16	119,314	163,886	283,200	278,951
Colorado	4	3	3				
Indiana	17	16	15	32,365	392,324	424,689	404,432
Maryland	6	5	5				
Wisconsin	5	2	2				
Kentucky	7	2	1				
Tennessee	14	3	3	16,598	46,327	62,925	77,417
Utah	1	1	1				
West Virginia	5	2	2				
Michigan	4	4	4				
Minnesota	3	2	2	33,520	43,242	76,762	72,287
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	14,293	21,389	35,682	35,237
Total	385	233	220	672,049	2,589,241	3,261,290	3,023,257

Plant Rehabilitation Is Marked in 1925 Construction

EXPENDITURES of more than a hundred million dollars were authorized during the year just closed for industrial expansion of iron and steel manufacturing facilities. The Bethlehem Steel Co. is spending sixty million dollars for plant improvement at its various holdings in the East, at Lackawanna, N. Y. and at Johnstown, Pa.; the United States Steel Corp. is spending twenty million dollars at the Homestead works for replacing obsolete equipment and for the construction of new rolling mills including a bloomer which when completed will rank as the largest installation of its type in the world; at the Tennessee Coal Iron & Railroad Co. at Fairfield, Ala., ten million dollars is being expended on plant improvements and enlargements; while the Youngstown Sheet & Tube Co. has a twenty million dollar program under way at its Indiana Harbor, Ind. division and its East Youngstown division. The large but orderly building program of 1925 also was shared in by other steel producers as shown in the accompanying tables.

Nine Open Hearths Added

Steelworks expansion during 1925 included nine open-hearth furnaces as shown in Table II. The compilation includes three completed by the Bethlehem Steel Co. for its Sparrow Point, Md. division, four by the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala. and one each by the Penn Seaboard Steel Corp., New Castle, Del., and the Trumbull Steel Co., Warren, O. Increased ingot capacity afforded by the completion of these furnaces amounts to 630,000 tons. Last year 16 open-hearths were included in the new construction program and these added 1,110,000 gross tons to the national ingot capacity. The tonnage added during 1925, therefore, is approximately 43 per cent less than was brought in during 1924. With the exception of 1924, however, open-hearth capacity added to the national ingot-making capacity is the largest since 1920. The added capacity for the year just closed was 18 per cent larger than that completed in 1923, 73 per cent larger than that finished in 1922 and about 2 per cent larger than that afforded by 1921 construction. The record established in 1917 insofar as open-hearth steel tonnage is concerned never has been surpassed. During this period 102 open-hearth furnaces were laid down. By the completion of these furnaces 5,413,000 gross tons was added to the country's steelmaking capacity. During 1916 105 open-hearths were built.

At the beginning of this year as shown in Table III, four open-hearth furnaces were under construction. Two are being built by the Bethlehem Steel Co. at its Johnstown, Pa. division and one each by the Kansas City Bolt & Nut Co., Kansas City, Mo. and the Penn Seaboard Steel Corp., New Castle, Del. While the Ford Motor Co., Detroit, will complete four open-hearths during the first quarter of 1926 these were reported a year ago and are not included in the total. Seven additional open-hearths are projected by the Weirton Steel Co. for erection at Weirton, W. Va. Completion of the four furnaces now building will add 177,500 tons to the national ingot output.

Table I

Recapitulation

	Completed 1925	Building 1925
By-product ovens	299	365
Blast furnaces	1	4
Open-hearth furnaces	9	4
Rolling Mills:		
Band	1	0
Bar	7	3
Belgian	1	2
Billet	2	3
Billet-sheet bar	2	2
Black plate	12	24
Blooming	3	4
Merchant	3	11
Piercing	1	0
Pipe, buttweld	11	0
Pipe, lapweld	5	0
Plate	1	0
Rerolling	2	0
Roughing	0	1
Shape	1	1
Sheet bar	1	0
Sheet, cold	19	33
Sheet, hot	13	4
Slabbing	0	1
Slitting	0	1
Strip, cold	4	2
Strip, hot	1	2
Structural	1	2
Tube, seamless	1	4
Universal	1	0
Total	93	97

Steelmaking Capacity

The total number of open-hearth furnaces built each year from 1913 to the beginning of 1926 together with the gross annual tonnages which have increased the ingot-making capacity of this country, is recorded as follows:

Year	Number of furnaces	Gross tons
1925	9	630,000
1924	16	1,110,000
1923	8	535,000
1922	7	364,000
1921	13	620,000
1920	26	1,268,000
1919	23	1,871,000
1918	39	2,192,500
1917	102	5,413,000
1916	105	4,300,000
1915	43	1,759,000
1914	9	507,000
1913	62	3,120,000

Pig iron producing capacity built in 1925 was confined to one stack. This was built by the Youngstown Sheet & Tube Co. Indiana Harbor, Ind. This stack is 95 feet high and its size represents the present economic compromise between increasing costs of plant, with auxiliaries and unit tonnage output. The stack, which is equipped with 16 tuyeres, was described in the Dec. 3, 1925 issue of IRON TRADE REVIEW. Its annual output adds 241,500 tons of pig iron to the national capacity. Two stacks were replaced during 1925, one by the Toledo Furnace Co., Toledo, O. and one by J. J. Gray, Jr. at Rockdale, Tenn. The output of the latter stack is to be confined to ferrophosphorus.

Capacities for 20 Years

Pig iron capacities in gross tons for all stacks placed in blast each year from 1905 to 1925 inclusive, may be compared in the following table:

1925	241,500
1924	120,750
1923	155,250
1922	None
1921	207,000
1920	1,138,500
1919	396,750
1918	1,425,000
1917	2,182,500
1916	530,000
1915	530,000
1914	None
1913	550,000
1912	1,000,000
1911	565,000
1910	1,794,000
1909	1,930,000
1908	1,188,000
1907	2,065,000
1906	1,135,000
1905	1,292,000

Four blast furnaces were under construction at the close of 1925. These when completed will afford 1,173,000 tons of pig iron annually. As shown in Table V two are being built by the Tennessee Coal, Iron & Railroad Co., Fairfield, Ala. and one each by the Inland Steel Co., Indiana Harbor, Ind. and the Midland Coke & Iron Corp., St. Louis. The stack of the Central

Furnace Co., Massillon, O. and the Mystic Iron Works at Everett, Mass. which were put under construction during the latter part of 1924 are scheduled for completion during the early part of 1926. Another modern blast furnace scheduled for completion during 1926 is that of the Hudson Valley Coke & Products Co., Troy, N. Y. which replaces the old Burden stack of the Burden Iron Co.

Records of the past year show that 27 obsolete stacks in this country were dismantled or were being dismantled as the year closed. This compares with seven stacks abandoned during 1924. Blast furnaces dismantled

As shown in Table VIII new by-products coke ovens built during 1925 total 299. Three types of ovens are represented and their combined output added 1,723,200 tons of coke to the national capacity. One year ago 684 ovens were completed affording 4,297,500 tons. Of the ovens built in 1925, 37 per cent were erected in Illinois, 27 per cent in Alabama, 20 per cent in Pennsylvania, 7 per cent in Indiana, 5 per cent in Michigan. At the beginning of 1926 as shown

Equipment Completed or Building During 1925

Table II

Open Hearths Completed in 1925

	Number of furnaces	Rated capacity tons	Annual capacity tons
Bethlehem Steel Co., Sparrows Point, Md.	3	100	210,000
Penn Seaboard Steel Corp., New Castle Del.	1	100	70,000
Tennessee Coal Iron & Railroad Co., Fairfield, Ala.	4	100	280,000
Trumbull Steel Co., Warren, O.	1	100	70,000
Total	9		630,000

Table III

Open Hearths Building Dec. 31

	Number of furnaces	Rated capacity tons	Annual capacity tons
Bethlehem Steel Co., Johnstown, Pa.	2	75	100,000
Ford Motor Co., Detroit	*4	100	280,000
Kansas City Bolt & Nut Co., Kansas City, Mo.	1	65	42,500
Penn Seaboard Steel Corp., New Castle, Del.	1	50	35,000
Trumbull Steel Co., Warren, O.	1	100	70,000
Weirton Steel Co., Weirton, W. Va.	†7	100	.....
Total	4		177,500

*Reported in 1924; not included in total.
†Projected.

Table IV

Blast Furnaces Completed in 1925

	Number of furnaces	Rated capacity tons	Annual capacity tons
J. J. Gray, Jr., Rockdale, Tenn.	**1	350	.....
Toledo Furnace Co., Toledo, O.	**1	550	.....
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	1	700	241,500
Total	1		241,500

**Replacement.

Table V

Blast Furnaces Building Dec. 31

	Number of furnaces	Rated capacity tons	Annual capacity tons
Central Furnace Co., Massillon, O.	*1	800	276,000
Hudson Valley Coke & Products Co., Troy, N. Y.	**1	450	155,250
Inland Steel Co., Indiana Harbor, Ind.	1	600	207,000
Midland Coke & Iron Corp., St. Louis	1	800	276,000
Mystic Iron Works, Everett, Mass	*1	500	172,500
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	2	600	414,000
Weirton Steel Co., Weirton, W. Va.	†1	800	.....
Total	4		1,173,000

*Reported in 1924; not included in total.
**Replacement.
†Projected.

Table VI

Stacks Remodeled in 1925

	Number or name
American Rolling Mill Co., S. Columbus, O.	West
Bethlehem Steel Co., Johnstown, Pa.	"E"
E. & G. Brooke Iron Co., Birdsboro, Pa.	Brooke
Carnegie Steel Co., Duquesne, Pa.	No. 2
Carnegie Steel Co., Rankin, Pa.	Nos. 1 and 2
Delaware River Steel Co., Chester, Pa.	Delaware
Hanna Furnace Co., Leetonia, Ohio	Cherry Valley
National Tube Co., McKeesport, Pa.	No. 1
Youngstown Sheet & Tube Co., Mayville, Wis.	"A"

Table VII

Stacks Being Remodeled Dec. 31

	Number or name
American Steel & Wire Co., Cleveland	"D"
National Tube Co., McKeesport, Pa.	No. 4
Wheeling Steel Corp., Wheeling, W. Va.	Top
Youngstown Sheet & Tube Co., E. Youngstown, O.	No. 2

Table VIII

By-Product Ovens Completed, 1925

	Number of ovens	Type of ovens	Est. annual coking cap., tons
Alabama By-Products Corp., Birmingham, Ala.	25	Koppers	157,000
By-Products Coke Corp., South Chicago, Ill.	110	Koppers	691,000
Consumers Power Co., Jackson, Mich.	15	Koppers	94,200
Lynn Gas & Electric Co., Lynn, Mass.	11	Koppers	69,100
Northern Indiana Gas & Electric Co., Fort Wayne, Ind.	19	Koppers	119,400
Perry Iron Co., Erie, Pa.	37	Wilputte	157,600
Philadelphia S. G. & Electric Co., Philadelphia	25	Roberts	78,100
Republic Iron & Steel Co., Thomas, Ala.	57	Koppers	356,800
	299		1,723,200

Table IX

Ovens Building Dec. 31, 1925

	Number of ovens	Type of ovens	Est. annual coking cap., tons
Central Furnace Co., Massillon, O.	†47	.....	.....
Hudson Valley Coke & Products Corp., Troy, N. Y.	55	Foundation	234,300
Illinois Steel Co., Gary, Ind.	*140	Koppers	879,500
Inland Steel Co., Indiana Harbor, Ind.	†77	.....	.....
Jones & Laughlin Steel Corp., Pittsburgh	60	Wilputte	255,600
Jones & Laughlin Steel Corp., Woodlawn, Pa.	122	Koppers	766,200
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	77	Koppers	483,500
Weirton Steel Co., Weirton, W. Va.	†45	.....	.....
Wheeling Steel Corp., East Steubenville, O.	51	Koppers	376,800
Total	365		2,116,400

*Reported in 1924; not included in total.
†Projected.

in Table IX, 365 regenerative ovens were under construction. These will increase the national output of by-product coke by 2,116,400 tons.

Various types of rolling mills built during 1925 total 93. This compared with 67 completed in 1924; 171 in 1923; 46 in 1922; 185 in 1921; 241 in 1920; and, 50 in 1919. Of the rolling mills completed during 1925 one represents a replacement. As shown in Table X, eleven buttweld pipe mills were completed. Nine of these units were built in the Chicago district, one in the Pittsburgh district and one in the Youngstown district.

In Table XI are listed the 97 mills which were under construction at the close of 1925. The total number of mills completed during 1925 and building as the year closed are made up largely of tin mills, merchant and bar mills, sheet mills and pipe mills. Ten bar and merchant mills were built during 1925 while 14 were under construction as this year opened. The completion program of 1925 claims 16 butt and lapwelded pipe mills. Thirteen hot sheet mills were completed last year while four were building at the close of the year. Cold sheet mills added to the present capacity total 19 while as 1926 opened 33 were under construction. Black plate capacity also was increased during 1925 by the addition of 12 mills. This year 24 are scheduled for completion.

Records of the past year show that several rolling mills were salvaged while a few were dismantled and moved to different locations. Plants which were scrapped during 1925 include the Singer works of the Crucible Steel Co., Pittsburgh, and the Shoenberger plant of the American Steel & Wire Co., Pittsburgh. Briggs & Turivas, Chicago, which recently purchased the 18-inch bar and the 10 and 8-inch guide mills of the Pullman Car & Mfg. Corp., Pullman, Ill., plan to salvage the equipment this month. A 12-inch merchant mill was dismantled at the plant of the Forged Steel Wheel Co., Butler, Pa. and moved to a plant in the South. Equipment of the Cromwell Steel Co., Lorain, O. was purchased during 1925 by the Kansas City Steel Corp. and moved to Kansas City, Mo. for assembly.

(*Concluded on Page* 130)

Rolling Mills Completed or Building During 1925

Table X

Rolling Mills Completed During 1925

Company	No. mills	Type mill
Acme Steel Co., Riverdale, Ill.	1	band
Alan Wood Iron & Steel Co., Ivy Rock, Pa.	1	blooming
Allegheny Steel Co., Brackenridge, Pa.	1	12″ bar
American Tube & Stamping Co., Bridgeport, Conn.	1	22″ billet
American Tube & Stamping Co., Bridgeport, Conn.	1	9″ hot strip
Bethlehem Steel Co., Buffalo	1	28″ structural
Bethlehem Steel Co., Johnstown, Pa.	1	14″ bar
Bethlehem Steel Co., Johnstown, Pa.	1	13″ bar
Bethlehem Steel Co., Johnstown, Pa.	1	12″ bar
Bethlehem Steel Co., Johnstown, Pa.	1	9″ bar
Bethlehem Steel Co., Sparrows Point, Md.	12	28″ black plate
Bethlehem Steel Co., Sparrows Point, Md.	6	26″ cold mills
Carnegie Steel Co., McDonald, O.	1	10″ shape
Central Tube Co., Economy, Pa.	1	buttweld pipe
Central Tube Co., Economy, Pa.	1	lapweld pipe
Clayton Mark & Co., Chicago	2	buttweld pipe
Elliott-Blair Steel Co., New Castle, Pa.	2	10″ cold strip
Ford Motor Co., Detroit	1	14″ bar
Fort Dodge Culvert & Steel Co., Fort Dodge, Iowa	1	16″ belgian
Gulf States Steel Co., Gadsen, Ala.	1	8″ merchant
Jones & Laughlin Steel Corp., Woodlawn, Pa.	1	14″ merchant
Kansas City Bolt & Nut Co., Kansas City, Mo.	1	24″ sheet bar
Kansas City Bolt & Nut Co., Kansas City, Mo.	1	32″ plate
National Tube Co., Gary, Ind.	5	buttweld pipe
National Tube Co., Gary, Ind.	4	lapweld pipe
National Tube Co., Gary, Ind.	1	seamless tube
National Tube Co., Ellwood City, Pa.	1	piercing
New Process Iron & Steel Co., Noblesville, Ind.	1	16″ rerolling
Newton Steel Co., Newton Falls, O.	5	26″ cold sheet
Newton Steel Co., Newton Falls, O.	1	30″ hot sheet
Pacific Coast Steel Co., Youngstown, Wash.	1	22″ universal
Parkersburg Iron & Steel Co., Parkersburg, Pa.	2	28″ hot sheet
Republic Iron & Steel Co., Youngstown, O.	1	buttweld pipe
Seneca Iron & Steel Co., Buffalo	6	29″ hot sheet
Seneca Iron & Steel Co., Buffalo	4	26″ cold sheet
Southern Steel & Rolling Mill, Inc., Birmingham, Ala.	1	16″ bar
Southern Steel & Rolling Mill, Inc., Birmingham, Ala.	1	8″ merchant
Southern Steel & Rolling Mill, Inc., Birmingham, Ala.	1	13″ rerolling
Stanley Works, New Britain, Conn.	1	cold strip
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	1	21″ billet-sheet bar
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	4	30″ hot sheet
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	3	26″ cold sheet
Thomas Sheet Steel Co., Niles, O.	1	26″ cold sheet
Universal Steel Co., Bridgeville, Pa.	1	30″ blooming
West Leechburg Steel Co., Leechburg, Pa.	1	18″ cold strip
Wisconsin Steel Co., Chicago	1	40″ blooming
Wisconsin Steel Co., Chicago	1	billet
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	2	buttweld pipe
Youngstown Sheet & Tube Co., East Youngstown, O.	*1	18″ billet-sheet bar
Total	93	

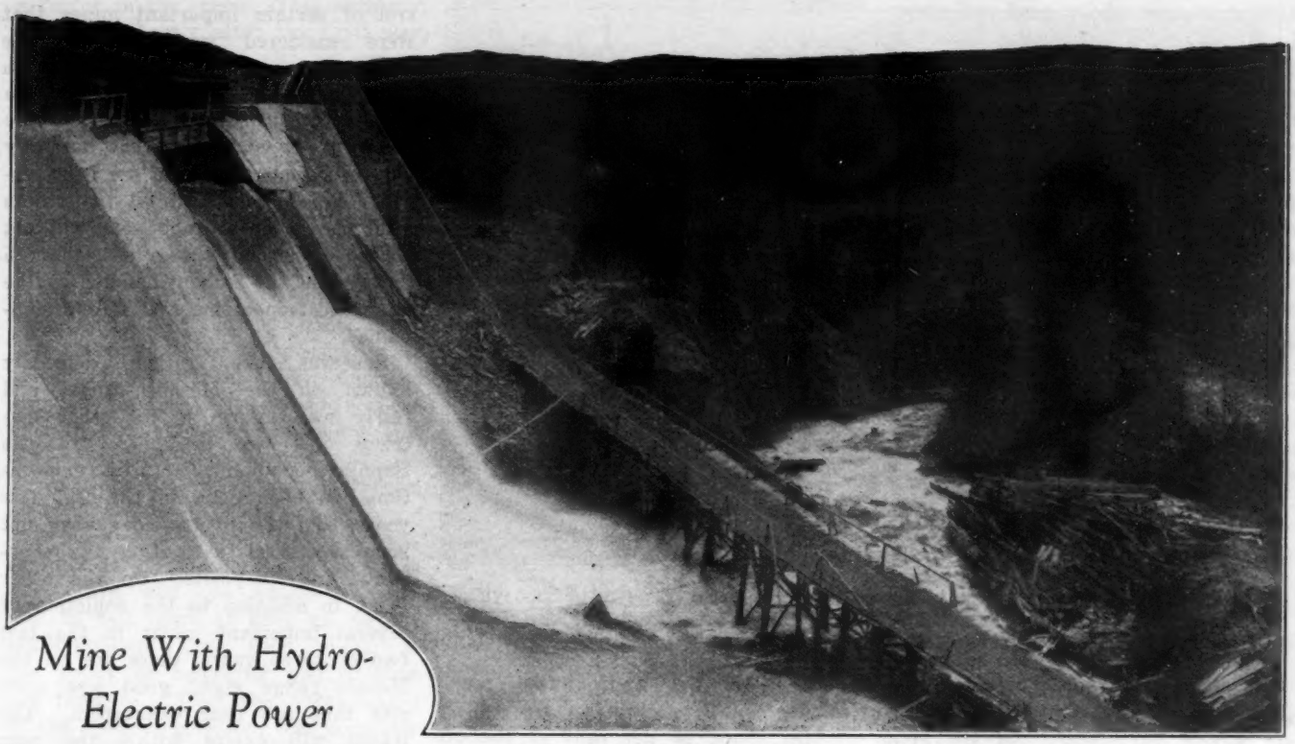
*Replacement.

Table XI

Rolling Mills Building Dec. 31, 1925

Company	No. Mills	Type mill
Acme Steel Co., Riverdale, Ill.	1	hot strip
Bethlehem Steel Co., Buffalo	*1	14″ structural
Bethlehem Steel Co., Lebanon, Pa.	*1	12″ merchant
Bethlehem Steel Co., Sparrows Point, Md.	1	40″ slabbing
Bethlehem Steel Co., Sparrows Point, Md.	*1	rod
Carnegie Steel Co., McDonald, O.	1	12″ hot strip
Carnegie Steel Co., McDonald, O.	1	14″ merchant
Carnegie Steel Co., Munhall, Pa.	**1	44″ blooming
Carnegie Steel Co., Munhall, Pa.	**1	54″ blooming
Carnegie Steel Co., Munhall, Pa.	**1	52″ structural
Carnegie Steel Co., Munhall, Pa.	**1	28″ structural
Colorado Fuel & Iron Co., Pueblo, Colo.	1	24″ shape
Colorado Fuel & Iron Co., Pueblo, Colo.	*1	8″ merchant
Crucible Steel Co. of America, Pittsburgh	**1	30″ blooming
Crucible Steel Co. of America, Pittsburgh	1	22″ billet
Crucible Steel Co. of America, Pittsburgh	1	9″ merchant
Delaware Seamless Tube Co., Auburn, Pa.	1	seamless tube
Ford Motor Co., Detroit	*1	42″ blooming
Ford Motor Co., Detroit	*1	32″ billet
Ford Motor Co., Detroit	*1	18″ billet-sheet bar
Ford Motor Co., Detroit	1	18″ slitting
Ford Motor Co., Detroit	†40	30″ hot sheet
Illinois Steel Co., Gary, Ind.	2	bar
Illinois Steel Co., S. Chicago, Ill.	1	merchant
Illinois Steel Co., S. Chicago, Ill.	1	40″ blooming
Jessop Steel Co., Washington, Pa.	1	10″ bar
Kansas City Steel Corp., Kansas City, Mo.	1	10″ merchant
Latrobé Electric Steel Co., Latrobe, Pa.	1	10″ merchant
McKinney Steel Co., Cleveland	1	18″ billet
McKinney Steel Co., Cleveland	1	21″ billet-sheet bar
McKinney Steel Co., Cleveland	1	12″ merchant
McKinney Steel Co., Cleveland	1	10″ merchant
National Tube Co., Gary, Ind.	*1	42″ universal skelp
National Tube Co., Gary, Ind.	*1	16″ skelp
National Tube Co., Gary, Ind.	*1	14″ skelp
Otis Steel Co., Cleveland	2	20″ cold strip
Penn Seaboard Steel Corp., New Castle, Del.	1	13″ belgian
Penn Seaboard Steel Corp., New Castle, Del.	1	10″ belgian
Pittsburgh Steel Products Co., Allenport, Pa.	1	seamless tube
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	4	30″ hot sheet
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	3	26″ cold sheet
Walsh & McGee Steel Co., Newark, N. J.	1	16″ roughing
Weirton Steel Co., Weirton, W. Va.	†1	seamless tube
Wisconsin Steel Works, Chicago	1	24″ merchant
Youngstown Sheet & Tube Co., East Youngstown, O.	2	seamless tube
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	1	18″ billet
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	1	21″ billet-sheet bar
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	24	28″ black plate
Youngstown Sheet & Tube Co., Indiana Harbor, Ind.	30	26″ cold mills
Total	97	

*Reported in 1924; not included in total.
†Projected
**Replacement



Mine With Hydro-Electric Power

THIS dam completed in 1925 by the Cleveland-Cliffs Iron Co. is the fifth unit in one of the greatest hydroelectric power developments in the Lake Superior region.

Commercial power lines have spread a network over other mining districts, but nowhere is the development more striking than on the Marquette range, where the Cleveland-Cliffs company is in position to operate all of its extensive properties by means of hydroelectric power. The company's five plants are capable of supplying 65,000,000 to 75,000,000 kilowatt hours per year.

The new Hoist dam creates a lake 11 miles long. The concrete spillway section is 440 feet long; entire concrete section 2350 feet long; earth fill 1400 feet long; height of spillway, 50 feet.

The Hoist power plant is on the Dead river four miles north of Negaunee. In addition to the Hoist plant, the company operates a plant on the Au Train river, one on the Carp river, and the McClure plant also located on the Dead river. The fifth plant is located at Republic on the Michigamme river.

There are two steam turbine units, one at Negaunee and one at Princeton, which have a capacity of 1500 horsepower each, and are used as a reserve during low water periods. These stations are connected to a distribution system with 115 miles of high tension lines and 40 miles of distribution feeders. This network supplies the power for the mines in the Gwinn, Negaunee, Ishpeming, North Lake and Republic districts, as well as the furnace and railroad departments at Marquette, the Woodenware Co., a subsidiary, and the land departments at Munising.

Iron Ore Industry in Stronger Hands

Experiences of 1925 Pave Way for Better Business and Operating Conditions—Price Reductions Impose Severe Test

By A. J. Hain

THE Lake Superior Iron ore industry was put to a severe test in 1925. Prices were the lowest they had been since 1915, while there were no compensating reductions in mining or shipping costs. Following the price cut of 80 cents a ton in 1924, an additional one averaging more than 50 cents was made in the spring of 1925.

During these two years wages practically were unchanged. They were not disturbed in 1924, and in 1925 one reduction of 10 to 15 per cent, made by several independent operators, affected in all less than 1000 of the 20,000 men in the industry.

In 1924 there was a reduction of 10 cents a ton in lake freight rates on iron ore; while in 1925 there was none. Railroad rates in the mining district were not changed during the two years. The rates remained at the level they reached in 1922, in which year there was a reduction of 10 per cent from the highest point they ever attained.

This comparison of costs with prices is made to explain some of the conditions the mine operators faced in 1925. Under these circumstances they were required to supply the blast furnaces of the country 55,500,000 tons of iron ore, an amount nearly equal to a normal season's output. Of this tonnage a large proportion had to be shipped by independent operators, subject to market conditions, unaffected by participating interests or partnerships.

Overdevelopment of the industry especially in the last ten years; the rush of some mines to produce ore and to stock it, after the war, and the inevitable slump in prices paved the way for a great test of operating efficiency in 1925. In some ways this was beneficial for the industry. Mine operators say it required thorough examination and study of costs; more economical administration and the fullest use of labor-saving equipment.

The United States Steel Corp. did not reduce wages in 1924 or 1925. Mine managers for the leading in-

THE SUSQUEHANNA MINE, MESABI RANGE, FIGURES IMPORTANTLY IN THE YEAR'S DEVELOPMENTS, AS AN EXAMPLE OF THE DRIFT OF MINE OWNERSHIP OR CONTROL INTO STRONGER HANDS

dependent companies advised against reductions, and their advice prevailed. It was a busy year, and the policy was to keep the majority of workmen employed at their usual wages, but to obtain a larger per capita output, with the aid of the efficient equipment for which the industry is noted.

Something of a beginning in this direction was made in 1924. The per capita output in two of the largest producing counties in that year was 30 per cent higher than in 1920. It was equal to that in 1916, when the Lake Superior district produced its record tonnage of 66,658,466. Some managers believe that 1925 will show the largest per capita output in the history of their mines.

The operators realized the only chance they had for an even break, or for profit, was through efficient management. A leader in the industry summarized what he believes to have been the approximate result of the year's operations. He said:

"On about 25 per cent of the ore shipped by the independents there was some profit for the producers; on 50 per cent there was neither loss nor profit, and on the remaining 25 per cent there was a loss. As for the Steel corporation, there is no statement as to how it figures in its ore costs, but its operations, of course, were affected by the same conditions that applied to others."

While the experiences of 1925 have placed the mine interests in a better position to face the future so far as their operating efficiency is concerned, other events that occurred are of broader importance. Due to recent changes in control or ownership of mines the industry today is in stronger hands, so that less ore will be forced on the market.

Companies that have acquired control of certain important mines that were considered "weak spots" in the trade, are in such financial position they will not have to sacrifice the ore merely to continue in business. There are only six companies that normally ship over 500,000 tons of ore in a season. The shipments of all the others combined in an average year will not exceed 1,500,000 tons, less than 5 per cent of the amount handled by the six largest operating and selling companies.

Reserves are rather definitely known on the Mesabi range, and fairly well known in all other districts, and are in control of the stronger companies. Little exploration has been done in the last few years, and the explorations have not been successful in locating any especially large deposits. On the other hand, in addition to the depletion of several important mines in the last two or three years, there are on the Mesabi range eight good size open pits that are near exhaustion. The leases will expire within the next three or four years. The total average annual production of these mines is about 3,000,000 tons. This tonnage will have to be replaced from other sources when those mines are through shipping.

Important Changes Made

The outstanding item on the long list of those pertaining to transfers of control or operation is the recent absorption of the Susquehanna mine of the Rogers, Brown Iron Co., by a syndicate composed of the M. A. Hanna Co., Inland Steel Co., and Republic Iron & Steel Co.

This great open pit adjacent to the Hull-Rust at Hibbing, Minn., has been producing about 500,000 tons of ore annually, far in excess of what its owners could use in their blast furnaces. A large portion of it was pressing on the market. This change in ownership will take about three-quarters of the mine's production off the market, and directly into consuming channels of participating interests. From the remaining one-quarter the Rogers, Brown company undoubtedly will obtain its requirements for its Buffalo furnaces, leaving little or none of this ore available for sale in the open market.

Operation of the Rogers, Brown company's Hiawatha and Rogers underground mines on the Menominee range by the M. A. Hanna company also is another important step in the same direction.

The year 1925 also marked the elimination of the Tod-Stambaugh Co. as

Minnesota Ore Reserves and Assessed Values

County	Ore in Ground May 1, 1924 Tons	Assessed value	May 1, 1925 Tons	Assessed value
St. Louis	1,124,267,278	$257,450,841	1,102,402,492	$247,629,325
Itasca	154,389,296	19,236,497	151,039,615	17,928,759
Crow Wing	45,733,970	3,614,515	51,660,746	3,609,184
Totals	1,324,390,544	$280,301,853	1,305,102,853	$269,167,258
Ore in Stockpiles				
St. Louis	9,512,598	$ 7,737,524	9,914,106	$ 7,199,325
Itasca	347,907	464,853	269,390	275,183
Crow Wing	387,051	417,229	463,815	447,887
Total	10,247,556	$ 8,619,606	10,647,311	$ 7,922,395
Total Merchantable Ore in Ground and Stockpiles				
St. Louis	1,133,779,876	$265,188,365	1,112,316,598	$254,828,640
Itasca	154,737,203	19,701,350	151,309,005	18,203,942
Crow Wing	46,121,021	4,031,744	52,124,561	4,057,071
Totals	1,334,638,100	$288,921,459	1,315,750,164	$277,089,653

The assessments as given in this table do not include those for surface values, structures or improvements.

a factor in the trade. This company, organized shortly after the Civil war, had seven mines and also an ore reserve, control of which was acquired through purchase by the M. A. Hanna Co.

The mergers effected by the Bethlehem Steel Corp., and by the Youngstown Sheet & Tube Co. involved many mines, and the rearrangement of ownership and operation was set forth in detail in these columns when they occurred. Certain mines have been removed from all possibility of going on the market; their financial and operating positions have been greatly strengthened. Consuming outlets by participating interests are assured. There is no surplus from these properties.

A very important result of the several large mergers in the past few years, and one which probably will be felt more as soon as certain readjustments have been made, is the policy of acquiring and holding ore reserves. Since the organization of the Steel corporation, that company has never sold any ore, either in the open market or privately, but has maintained a policy of conservation in so far as its ore reserves are concerned, it being the consensus of opinion that with the very large investments in steel plants, railroads, vessel lines, and other industries conducted by the corporation, the raw material supply is the backbone of it all.

To compete successfully, other large units, as the result of recent mergers, have adopted the same policy as a matter of self-protection and in order to insure the investors in their securities against possible depletion of raw material supplies. There probably will be further mergers, and it is becoming increasingly more difficult to acquire raw material reserves. This means the still further drawing away of supplies from the open market.

A few other instances may be cited to show the trend of affairs in mine ownership. The Plymouth mine is one of the largest on the Gogebic range, with an annual output of about 500,000 tons. It was developed by Coates & Tweed, but now is a Pickands, Mather & Co. operation through ownership acquired by them with the Youngstown Sheet & Tube Co., Bethlehem Steel Corp., Steel Co. of Canada, and the Pittsburgh Steel Corp.

The Zenith mine on the Vermillion range has been producing about 300,000 tons annually. When the Steel corporation gave up its lease on this mine the property did not go to one of the lesser companies as may have been expected, but was taken up by Pickands, Mather & Co. with the Bethlehem Steel Corp., Youngstown Sheet & Tube Co., and Republic Iron & Steel Co., with Pickands, Mather & Co. acting as operators for the other stockholders.

The Wakefield mine on the Gogebic range that has produced over 7,000,000 tons of ore is operated by the M. A. Hanna Co. Potential production was larger than required by this company, and last year it sold one-half interest to the Inland Steel Co., thus placing against this property a consuming interest to the extent of one-half its output.

Aside from the stronger position of the industry from the operating standpoint, the consensus of opinion among mine interests is that the coming season will mark the beginning in the improvement of the market for their product. Stockpiles have been greatly reduced. Demand for ore, they believe, will be equal to or larger than that in 1925. Stocks at lower lake ports and furnaces are slightly under normal, due to the restricted buying in 1924, and the increased consumption in 1925 as compared to the expectations earlier in that year.

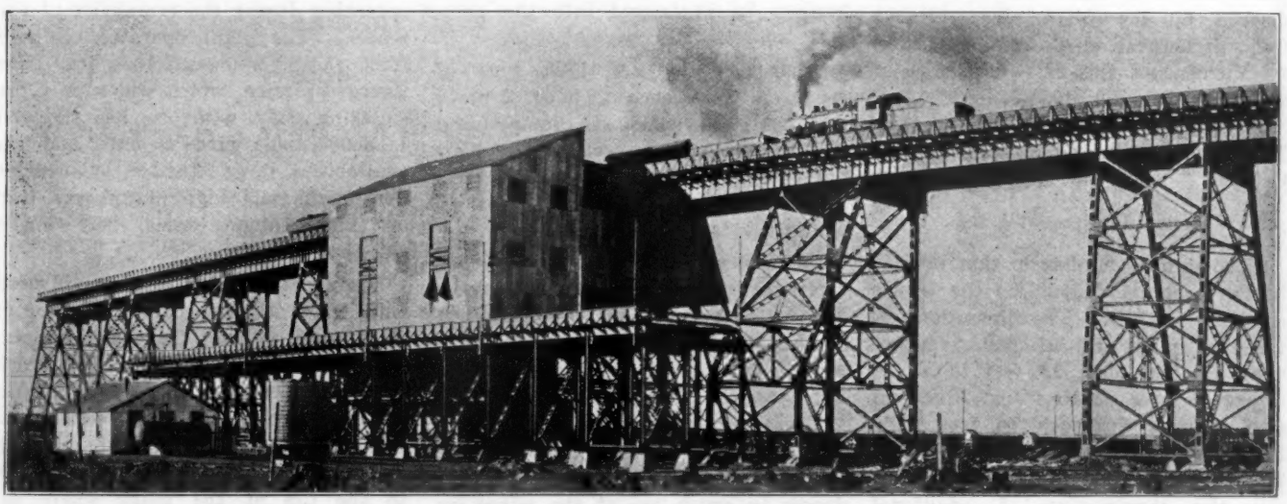
The feeling in the trade is that a better price situation will develop. Some of the operators quote consumers as expressing the opinion that iron ore prices have been out of line with other materials and as saying they would be willing to pay more for ore, if prices were stabilized. Free and open market competition has been the ruling factor in the trade for several years.

Ford Acquires More Iron Ore

ON THE Michigan iron ranges one of the important developments of the year was the exploration work carried on by R. S. Archbold and associates, the Palm-Book Land Co., on a large acreage west of Ishpeming.

Exploration disclosed high-grade ore bodies, and the property was taken under option by the Ford Motor Co., from Archbold and associates, about Sept. 1. Check drilling now is being done with four drills, operating from a modern, central drilling camp.

It is expected that the option will be exercised, and with such a large acreage, the property might easily produce several important underground mines. This is the only property acquired by the Ford interests, other than their purchase of the Michigan Land & Iron Co.'s timber and mineral lands some years ago. Aside from the old Imperial mine, it is generally believed no other ore bodies have been discovered on the latter property.



ANOTHER LARGE CRUSHING PLANT BUILT IN 1925 FOR BENEFICIATING LAKE SUPERIOR IRON ORE. THIS IS THE OLIVER IRON MINING CO.'S PLANT AT HIBBING, MINN.

What the Minnesota Tax Bill Amounts To

TAXATION problems of the Lake Superior iron ore industry have been the subject of discussion and controversy many years. In 1925 the matter was in status quo, as the legislature adjourned over the year without carrying out the threat to increase the occupation, or tonnage, tax from 6 to 10 per cent.

In the meantime, here is a brief summary of how the tax laws of the state operated against the mine interests in 1925. First, there is the ad valorem tax amounting to $19,500,000. The tonnage tax for 1925 will be about $2,700,000. The royalties that companies pay to the state for operating state-owned mines, that may be considered a form of tax, amount to about $2,000,000. The tax on the royalties paid to private fee owners is around $800,000. The total of these figures is $25,000,000, in a year when shipments of iron ore from the state amounted to 38,500,000 tons.

The average tax per ton is 65 cents. The tonnage tax money obtained by the state on operations in 1925 is about equal to that in 1924. Prices were lower, netting the state less tax per ton, but tonnage was larger.

Now to summarize: The taxes averaged 65 cents; the railroad rate per ton from Mesabi mines to dock was 91 cents; the lake rate to lower lake port, 83 cents, a total of $2.39. The quoted market price of Mesabi nonbessemer, representing the great ore tonnage from Minnesota, in 1925 was $4.25, lower lake port. Deduct $2.39, and there remains $1.86. From this amount the operators must pay operating expense; royalties; insurance, depletion and government tax. These figures are approximate, but conservative, and they sum up the tax "torture," as the operators have come to view it.

In the five years of the tonnage tax law, a measure that the industry fought as discriminatory and illegal, this law by itself has exacted from Minnesota operators $17,000,000.

In the operating department of the industry, the outstanding feature of the year was the extension of plant and equipment for the preparation of iron ore for the market. Every year shows an increase in the amount of ore that is treated before shipment, and in the tonnage in sight that will require special treatment.

Two new crushing plants were added to the prior list of 22 in Minnesota using various methods for beneficiating ore. One of the largest ever erected in that state is the two-unit combined crushing-screening plant put in operation in the Hibbing district by the Oliver Iron Mining Co. Structural steel erection began in March and the first unit was in operation July 20, 1925. Up to Oct. 31, 1,244,120 tons of ore was treated. The second unit began operating in October.

Heavy Equipment Used

This plant is similar to that erected in the Virginia district by the Oliver company in 1924. The dimensions of the new plant are 91 feet 8 inches wide, 87 feet long, 86 feet high. It is served by a double-track structural steel viaduct approach 86 feet high, 510 feet long, with tail track 400 feet long. The building is designed to permit the construction of additional units without interfering with the operation of the two original.

Each unit consists of one pan conveyor 96 inches wide, 24 feet long; one set of stationary grizzly bars; one pan conveyor 96 inches wide and 14 feet long, and one 60 x 48-inch jaw crusher. Ore is delivered to the plant in 20-yard and 30-yard air-dump, steel stripping cars, and is dumped into the receiving pockets. From the pockets the ore is conveyed by the 24-foot pan conveyors to the stationary grizzly bars, the "throughs" dropping directly into the shipping pockets, The chunks are conveyed by the 14-foot pan conveyors to the jaw crushers, and from the crushers the product is discharged into the shipping pockets.

Each unit handles 1750 tons of crude ore per operating hour, 2 to 10 per cent of which is lumpy and passes through the crushers. This plant represents the latest and largest of the gravity feed type now in use in the Lake Superior district.

The other crushing plant to which reference was made is that completed at the Scranton mine by Pickands, Mather & Co. This plant is of a smaller type, with capacity for treating October, 8000 tons of ore in 20

These two crushing plants are indicative of the tendency noted before on the part of Lake Superior ore producers to crush ore at the mines before it is shipped. The practice is growing among smaller producers, and in the case of individual mines, all of it being a part of the general tendency to improve Lake Superior ore for the furnace man's use.

At the Rolling Mill mine of Clement K. Quinn & Co. in Michigan crushing equipment has been installed underground, and all ore is crushed before it is hoisted from the mine. The McKinney Steel Co. has put in one or two, and the M. A. Hanna Co. has installed crushers either underground or in head frame in three mines in two years, and now this is true of practically all mines in the Iron River, Crystal Falls district.

Iron Ore Sintered

In developments pertaining to the treatment of fine ore, one of the features of the year was the progress made at the Evergreen sintering plant of the Minnesota Sintering Co., at Crosby, Minn., Cuyuna rangs. This plant was completed in 1924, as described in the Jan. 1, 1925 issue of IRON TRADE REVIEW, but it was not until the past year that it received a thorough tryout.

The operation of this plant to date has demonstrated again the fact that some Lake Superior ores at least, can be sintered with a resulting product that is desirable for use in blast furnaces. This point, of course, was first proved by the Mesabi Iron Co. at Babbitt, Minn., in which plant it was demonstrated that the low-grade magnetite ores of the eastern Mesabi could be sintered. In the Evergreen plant an entirely different type of ore is used as a raw material but the resulting product is a sinter of satisfactory structure.

The plant of the Minnesota company started operating the latter part of July, 1925, when ore was available from the Evergreen mine, and continued operating during the remainder of the season. The plant operated on both iron ore and manganiferous ore. The Evergreen mine, which will supply the sintering plant with ore, has stripped 1,745,000 cubic yards to date, and has available a large tonnage of medium phosphorus and high phosphorus iron ore and manganiferous, both direct shipping and sinter.

During the winter certain additions were made to the plant, including a chain grizzly over the track hopper, a crusher, and a washer. The crude ore is dumped on a chain grizzly with 4½-inch openings. The oversize is crushed to 2 inches, and both products are carried on the same belt conveyor to the top of the plant where all the crude ore is screened on ⅜-inch

(*Concluded on Page* 104)

Courtesy National Lamp Works of General Electric Co.

Cleveland Steel Works By Night

Domestic Market Reviews for 1925

Pig Iron	Ferroalloys
Coke	Structural Shapes
Semifinished Steel	Rails
Tin Plate	Sheets
Cast Iron Pipe	Plates
Merchant Bars	Nonferrous Metals
Welded Pipe	Old Material
Wire Products	Coal By-Products

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Domestic Iron and Steel Prices in 1925

Average Monthly Prices of Leading Materials at Pittsburgh

PIG IRON

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bessemer	$24.56	$24.61	$23.86	$22.86	$21.36	$20.76	$20.76	$20.76	$21.01	$21.46	$22.61	$22.76
Basic	23.56	23.76	23.11	22.96	20.61	19.91	19.76	19.76	21.01	20.46	21.61	21.76
Foundry No. 2	23.91	23.76	22.86	21.96	20.61	20.11	20.26	20.26	20.51	20.96	22.11	22.26
Malleable	23.96	23.76	23.01	22.06	20.76	20.26	20.26	20.26	20.51	20.96	22.11	22.26
Gray Forge	23.66	23.26	22.36	21.66	20.26	19.66	19.76	19.76	19.86	20.46	21.61	21.76
Bessemer Ferrosilicon 10 per cent	39.50	39.50	39.50	37.50	35.50	35.50	35.50	35.50	34.00	33.50	34.25	35.00

SEMIFINISHED

Billets, Bessemer	$37.40	$37.60	$37.75	$35.80	$35.35	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00
Billets, Open Hearth	37.80	37.60	37.75	35.80	35.35	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Sheet Bars, Bessemer	39.20	39.00	38.50	37.00	36.25	35.00	35.00	35.00	35.00	35.00	35.25	36.00
Sheet Bars, Open Hearth	39.20	39.00	38.50	37.00	36.25	35.00	35.00	35.00	35.00	35.00	35.25	36.00
Wire rods	48.00	48.00	48.00	48.00	46.00	45.00	45.00	45.00	45.00	45.00	45.50	45.00

COKE

Furnace, Spot	$4.10	$3.65	$3.35	$3.10	$3.10	$2.80	$2.80	$3.10	$3.45	$5.65	$6.35	$4.00
Foundry, Spot	5.10	4.30	3.85	3.85	3.70	3.75	3.75	3.80	4.20	5.95	6.85	5.00

ROLLED PRODUCTS

Structural Shapes	2.10c	2.10c	2.10c	2.05c	2.00c	2.00c	2.00c	1.95c	1.90c	1.90c	1.95c	1.95c
Plates, base	2.00c	2.10c	2.05c	2.00c	2.00c	1.95c	1.90c	1.85c	1.80c	1.80c	1.85c	1.85c
Steel Bars, base	2.10c	2.15c	2.10c	2.05c	2.00c	2.00c	2.00c	1.95c	1.95c	2.00c	2.00c	2.00c
Cold Finished Steel Bars	2.80c	2.80c	2.75c	2.70c	2.70c	2.60c	2.55c	2.50c	2.50c	2.45c	2.50c	2.50c
Strip, Hot Rolled, base	2.35c	2.40c	2.35c	2.20c	2.20c	2.20c	2.20c	2.20c	2.20c	2.25c	2.30c	2.30c
Strip, Cold Rolled, base	4.10c	4.15c	4.05c	4.00c	3.85c	3.65c	3.75c	3.75c	3.75c	3.75c	3.90c	2.90c
Steel Pipe, 1 to 3-inch, discount	62	62	62	62	62	62	62	62	62	62	62	62
Standard Spikes, base	2.90c	2.90c	2.85c	2.80c	2.80c	2.80c	2.80c	2.75c	2.75c	2.80c	2.80c	2.80c
Wire Nails, base	2.85c	2.85c	2.85c	2.80c	2.75c	2.70c	2.70c	2.65c	2.65c	2.65c	2.65c	2.65c
Plain Wire, base	2.60c	2.60c	2.60c	2.55c	2.50c	2.45c	2.50c	2.50c	2.50c	2.50c	2.50c	2.50c
Hoops, base	2.45c	2.45c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.45c	2.50c	2.50c
Bands, base	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.45c	2.50c	2.50c
Structural Rivets, base	2.60c	2.55c	2.50c	2.50c	2.45c	2.40c	2.45c	2.40c	2.40c	2.40c	2.60c	2.60c
No. 28 Black Sheets	3.55c	3.50c	3.45c	3.35c	3.25c	3.15c	3.15c	3.15c	3.15c	3.10c	3.25c	3.35c
No. 10 Blue Annealed	2.70c	2.75c	2.65c	2.55c	2.45c	2.30c	2.30c	2.30c	2.30c	2.25c	2.40c	2.50c
No. 28 Galvanized Sheets	4.75c	4.80c	4.70c	4.50c	4.35c	4.25c	4.20c	4.20c	4.20c	4.25c	4.50c	4.60c
Tin Plate, base box	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50

OLD MATERIAL

Heavy Melting Steel	$22.10	$19.00	$18.25	$17.00	$16.60	$17.10	$17.20	$19.25	$19.00	$18.40	$19.50	$19.00
Low Phosphorus	26.20	25.35	23.85	21.60	21.75	22.40	22.50	22.50	23.00	23.40	24.00	24.00
No. 1 Cast	19.50	18.85	18.35	17.80	17.00	17.00	17.00	17.10	17.50	17.40	17.75	17.50

Average Monthly Prices of Leading Materials at Chicago

PIG IRON

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Lake Superior Charcoal	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04
Northern No. 2 Foundry	23.80	24.00	24.00	22.60	21.25	20.25	20.30	20.50	21.20	21.60	22.75	23.00
Southern No. 2 Foundry	26.01	26.01	26.01	24.51	24.51	24.01	24.01	23.10	24.11	25.51	26.67	27.01
Malleable	23.80	24.00	24.00	22.60	21.25	20.25	20.30	20.50	21.10	21.60	22.75	23.00

ROLLED PRODUCTS

Bar Iron, base	2.00c	2.00c	2.10c	2.10c	2.10c	2.05c	1.95c	1.90c	1.90c	1.90c	2.00c	2.00c
Rail steel bars, base	2.05c	2.15c	2.05c	2.00c	2.10c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c
Steel bars, base	2.10c	2.20c	2.20c	2.20c	2.10c	2.10c	2.10c	2.10c	2.10c	2.10c	2.10c	2.10c
Structural shapes, base	2.20c	2.30c	2.30c	2.25c	2.20c	2.20c	2.10c	2.10c	2.10c	2.10c	2.10c	2.10c
Plates, base	2.20c	2.30c	2.30c	2.25c	2.20c	2.20c	2.10c	2.10c	2.10c	2.10c	2.10c	2.10c
Sheets, No. 28 black base	3.75c	3.85c	3.75c	3.65c	3.50c	3.40c	3.35c	3.35c	3.35c	3.35c	3.45c	3.50c

OLD MATERIAL

Heavy melting steel	$19.45	$17.55	$16.70	$15.00	$14.90	$15.90	$15.35	$16.05	$16.45	$16.25	$16.40	$16.00
No. 1 railroad wrought	19.15	17.75	16.65	14.60	14.65	15.90	15.90	17.45	17.05	16.30	17.70	15.75
Rails for rolling	20.95	19.15	18.15	15.85	16.75	18.15	17.45	19.10	19.00	18.55	19.40	18.75
Car wheels	21.00	19.65	17.50	16.85	15.90	17.40	17.15	17.50	17.60	17.25	18.15	18.25
No. 1 cast	22.10	20.15	19.70	18.85	19.00	19.50	19.75	20.30	20.15	19.40	20.90	20.50

Average Monthly Prices of Leading Materials in the East

PIG IRON

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Basic, Eastern Pennsylvania	$24.25	$24.25	$23.75	$22.60	$21.50	$21.50	$21.25	$20.50	$20.50	$20.50	$22.70	$23.00
No. 2X Foundry, Philadelphia	25.61	25.26	24.51	23.16	21.76	21.51	21.26	21.76	21.86	22.61	24.01	24.26
No. 2X Virginia, furnace	24.50	24.50	24.00	23.75	23.25	23.00	23.00	23.00	23.00	23.00	23.00	23.80
*Standard Low Phosphorus, Phila	26.76	26.76	26.76	26.26	25.26	25.26	25.26	25.26	24.01	24.51	24.76	26.27
Standard Gray Forge, Eastern Pa	24.50	24.50	24.00	22.80	22.00	21.75	21.50	21.25	20.50	20.50	22.75	23.25

ROLLED PRODUCTS

Tank Plates base, Philadelphia	2.32c	2.32c	2.37c	2.32c	2.22c	2.22c	2.22c	2.12c	2.07c	2.02c	1.92c	2.07c
Structural Shapes, base, Phila	2.32c	2.32c	2.32c	2.32c	2.22c	2.22c	2.22c	2.17c	2.17c	2.17c	2.17c	2.07c
Steel Bars, Base, Philadelphia	2.32c	2.37c	2.42c	2.32c	2.32c	2.32c	2.32c	2.27c	2.27c	2.27c	2.32c	2.32c
Bar Iron, common base, Philadelphia	2.28c	2.28c	2.28c	2.27c	2.22c	2.22c	2.17c	2.17c	2.12c	2.12c	2.22c	2.22c
Sheets No. 10 Blue Annld., Phila	3.02c	3.02c	3.02c	2.77c	2.72c	2.62c	2.57c	2.57c	2.57c	2.62c	2.72c	2.82c
Billets, Open Hearth, Philadelphia	$42.80	$42.80	$43.30	$42.30	$40.30	$40.30	$40.30	$40.30	$40.30	$39.30	$40.30	$40.80

OLD MATERIAL

†No. 1 Heavy Melting Steel	$20.00	$17.85	$16.25	$15.50	$15.00	$15.65	$16.00	$16.75	$17.25	$17.00	$17.60	$17.60
†No. 1 Railroad Wrought	21.50	20.50	19.50	18.40	17.60	18.20	18.25	18.25	18.25	18.25	18.75	18.75
†No. 1 Cupola Cast	20.75	19.35	18.50	18.20	17.10	17.75	17.75	17.75	18.65	18.75	18.75	18.75

*Standard Low Phosphorus prices at Philadelphia are based on English iron during the first 10 months and on domestic iron during November and December.

†These prices apply to delivery at Eastern Pennsylvania consuming points other than Bethlehem.

Pig Iron Record Fair In 1925

Active First and Fourth Quarters, With Dull Midyear—Heavy Melt Throughout Brings Production Close to Highest Output—Foreign Iron Gains Entrance Along Coasts—Prices Below Preceding Year

HIGH lights of the pig iron market in 1925 comprised the well-sustained melting rate; heavy shipments in the first and final quarters; and the quick response of quotations to fuel and ore price declines. Notwithstanding a constantly falling market from February to July due to these influences, with a correspondingly impaired demand, pig iron output for the year was about 3,675,000 tons lower than the record year, 1923. With the last month of 1925 estimated, this gives a total output for the year of 36,350,000 tons.

Heavy buying late in 1924 gave makers orders which were not all released in the first quarter. The first real buying movement was in May and June when it was estimated fully 1,000,000 tons were placed upon makers' books within four or five weeks for third and fourth quarter.

Some Cleveland interests place 1925 activity on a par with that of 1923. The Otis Steel Co. gives the following figures as actual average sale prices, Cleveland base, during 1925: January, $24; February, $23.50; March, $23; April, $22.50; May, $20; June, $19; July, August and September, $19.50; October, $20.50. In November it withdrew from the market. The McKinney Steel Co. withdrew at the same time, so that Cleveland purchasers bought only from outside sources. Purchases of valley iron were made by them in December at $22.26, delivered Cleveland.

Valley merchant furnaces by the middle of January were quoting $22, $23 and $22.50, valley, on basic, bessemer and No. 2 foundry respectively. By June, however, these levels had receded to $18, $19 and $18.50 respectively, and some large buyers of No. 2 foundry were able to close at $18. The general trend of valley prices on steelmaking iron is shown by the following table of averages compiled by W. P. Snyder & Co.:

The Year's Range

	High	Low
No. 2 foundry, valley	$22.25	$18.50
Basic, valley	22.00	18.00
No. 2 foundry, Chicago	24.00	20.25

MONTHLY PIG IRON AVERAGES

	—1925—		—1924—	
	Bess.	Basic	Bess.	Basic
Jan.	$22.895	$22.00	$23.00	$22.00
Feb.	22.738	21.50	23.50	22.00
March	22.30	21.30	23.375	22.00
April	21.125	20.00	22.80	21.50
May	19.81	18.50	22.125	20.32
June	19.00	18.00	21.143	19.733
July	19.00	18.00	20.144	19.00
Aug.	19.00	18.00	20.00	19.00
Sept.	19.28	18.27	20.00	19.00
Oct.	19.74	18.609	20.00	18.50
Nov.	20.88	19.818	20.32	19.68
Dec.	21.00*	20.00	21.885	20.281
Average	20.56*	19.50	21.524	20.25

*Estimated.

The unsteady and rising coke market created an active Chicago spot market in November. The price of malleable and No. 2 foundry which strengthened to $24 in January, remaining until the beginning of the second quarter, receded to $20.50 in late June and early July. Some strength was manifested late in July, gaining ground gradually until the year closed substantially where it opened.

New England sales fluctuated considerably. Prices, however, were fairly well stabilized. No. 2X iron in January was quoted between $27 and $28, delivered, supplies coming from Buffalo and eastern Pennsylvania. Shipments of foreign iron drove prices along the Atlantic Coast below the levels further west. Continental iron sold in March in Boston at $23 f.o.b. cars when the Buffalo market was $27.91, delivered. This discrepancy disappeared in April when Buffalo producers were forced down to $21 for delivery into Massachusetts. Leading eastern Pennsylvania furnaces then dropped their prices to a $22.50 base. From that time on, prices gradually declined until midsummer when $18, Buffalo, and $20, eastern Pennsylvania, were reached. At the close of the year $21.50, Buffalo, and $23, eastern Pennsylvania, were the prevailing figures. Over 100,000 tons of foreign iron reached Boston before Sept. 30, of which 40,000 tons came from India. While foreign iron shipments declined in September and October, they increased again in November.

Foreign iron, the imports of which were about 424,056 tons in the year, is causing considerable apprehension in the East and some agitation is forming for an increase in the tariff. Competition of steelworks furnaces also is growing and in some quarters the days of the merchant furnaces are numbered. In 1926 additional competition will be furnished by furnaces at Troy, N. Y., and Everett, Mass. Foreign sellers, except Scotch and English, are growing more careful about meeting the specifications of American buyers. In the middle of November the minimum price on European high phosphorus foundry iron was $21, duty paid, tidewater, while on foundry iron, the equivalent of American 1.75 to 2.25 silicon, $21.50 to $22.50 prevailed.

Good Year In Coke

Price, Demand and Production Varied—Coal Strike a Factor

FLUCTUATIONS in demand, price and production again faced the beehive coke producer in 1925. While beehive production was only about half a million tons larger than 1924, on a weekly basis production did not soar so high nor did it sink so low as in the previous year. The largest week in 1924 was that of March 14, with 249,250 tons, while in 1925 the peak production was the week of Jan. 17 with 209,040 tons. The low point in 1924 was reached in the week of Aug. 8 with 46,320 tons, while the smallest 1925 week was that of July 11 with 67,190 tons.

The Year's Range

	High	Low
Furnace, Connellsville	$6.35	$2.80
Foundry, Connellsville	8.50	3.70

Production of by-product coke broke all records with an indicated total of 38,100,000 tons, compared with 37,512,000 tons in 1923, the previous high point.

Outside influences combined to bring about these results. Not the least of these was the anthracite strike. Other factors included the poor summer pig iron market; the purchase of beehive fuel by steel companies early in the

year and sales later of their by-product coke to blast furnace operators ordinarily using beehive coke. At least two merchant furnaces bought their last half fuel from a Mahoning valley steelmaker at a $2.75 Connellsville equivalent when the Connellsville market was about $3.

High levels early in the year, such as $5 to $5.25 on extended deliveries of the furnace grade, with $4.10 to $4.25 in the spot market, and of $5 to $6 on foundry, were the result of strength late in 1924 which advanced coke oven wages. These had to be revised in March, settlements accompanied by adjustments downward to $3.25 on fuel contracts taken at $4.25, some with and some without a wage clause. Then ensued a quiet pig iron market with blast furnaces suspending shipments, and by June and July operators were willing to take third quarter business at $3, the spot market then being around $2.85. Foundry coke was available at $4 or less and medium sulphur, which early in the year sold at $3.50, was bought at $2.90. In July the market grew duller and prices again receded. Production, however, was curtailed to contract obligations which had a slight strengthening influence upon price. A steelworks interest paid $3.10 for extended deliveries. The period immediately before the anthracite strike saw only intermittent buying at around $3. The anthracite strike in September did not really affect the Connellsville coke market until October. Then a sudden and somewhat prolonged cold spell ate into eastern anthracite reserves and sent dealers to the Connellsville region for substitutes. Principals and middle interests bid against each other for available supplies and advances were made until $8.50 to $9 or higher prevailed, with $1 to $2 higher on chestnut and egg coke.

In November something of a reaction set in. Increased production; embargoes in the East because of congestion; mild weather over an extended period, introduced comparatively low prices again, so that early in December standard furnace coke was quoted at $4 to $4.50 and foundry about $1 higher. The year closed with blast furnace operators showing no apprehension concerning first quarter supplies, for while prices of $4.25 to $5 were named, they were assured they would be taken care of.

The same general conditions applied in the New River and Wise county regions as well as in by-product territories, as in the Connellsville region. In New England where sales of by-product coke were commensurate with 1924, the $11.50 delivered price was advanced 50 cents in February but again was $11.50 in March, continuing at that point until August. Then it advanced to $12, again in October to $12.50, and soon after to $13, demand being heavy because of the anthracite strike.

Jobbers' Year Good

Tonnage Moved In 1925 Exceeds 1924—Price Range Small

STEADILY increasing business in the iron and steel warehouse market during 1925, after several months of slow trading, made an aggregate of tonnage handled exceeding that of 1924. It took jobbers two or three months of the year to liquidate inventories accumulated during the last months of 1924. In most districts sales trends gained consistently each month since March. Extended mill deliveries have contributed to the increased warehouse demand.

Prices were subject to severe shading at times. Weakness was particularly noticeable in sheets, reductions up to $8 a ton being effected. Since early fall jobbers have made more concerted efforts to obtain the full list and quotations have advanced. A reclassification of cold-rolled steel extras was made in February and on cold drawn in November.

Shape and bar buying in New England was estimated at 5 to 10 per cent above the 1924 tonnage. Prices dropped to a low point in July but recovered gradually in succeeding months. Foreign competition was not as keen as expected, due to American mills keeping prices close in line with European mills.

The year closed with the tendency upward in Pittsburgh. The $2 a ton mill advance strengthened warehouse prices there. Some mills made virtual warehouse deliveries on concrete bars at 2.00c to 2.10c, but the jobbers held to a 2.50c price.

Chicago jobbers started 1925 slow but, after August, sales increased steadily. Prices were unusually steady, the only major improvement being in sheets which dropped in June and advanced in November.

Tonnages booked in 1925 by Cleveland jobbers were better than 1924 and in some cases the best since 1920.

Semifinished Slow

Extreme Conditions Met as Demand Varied—Early Promise not Held

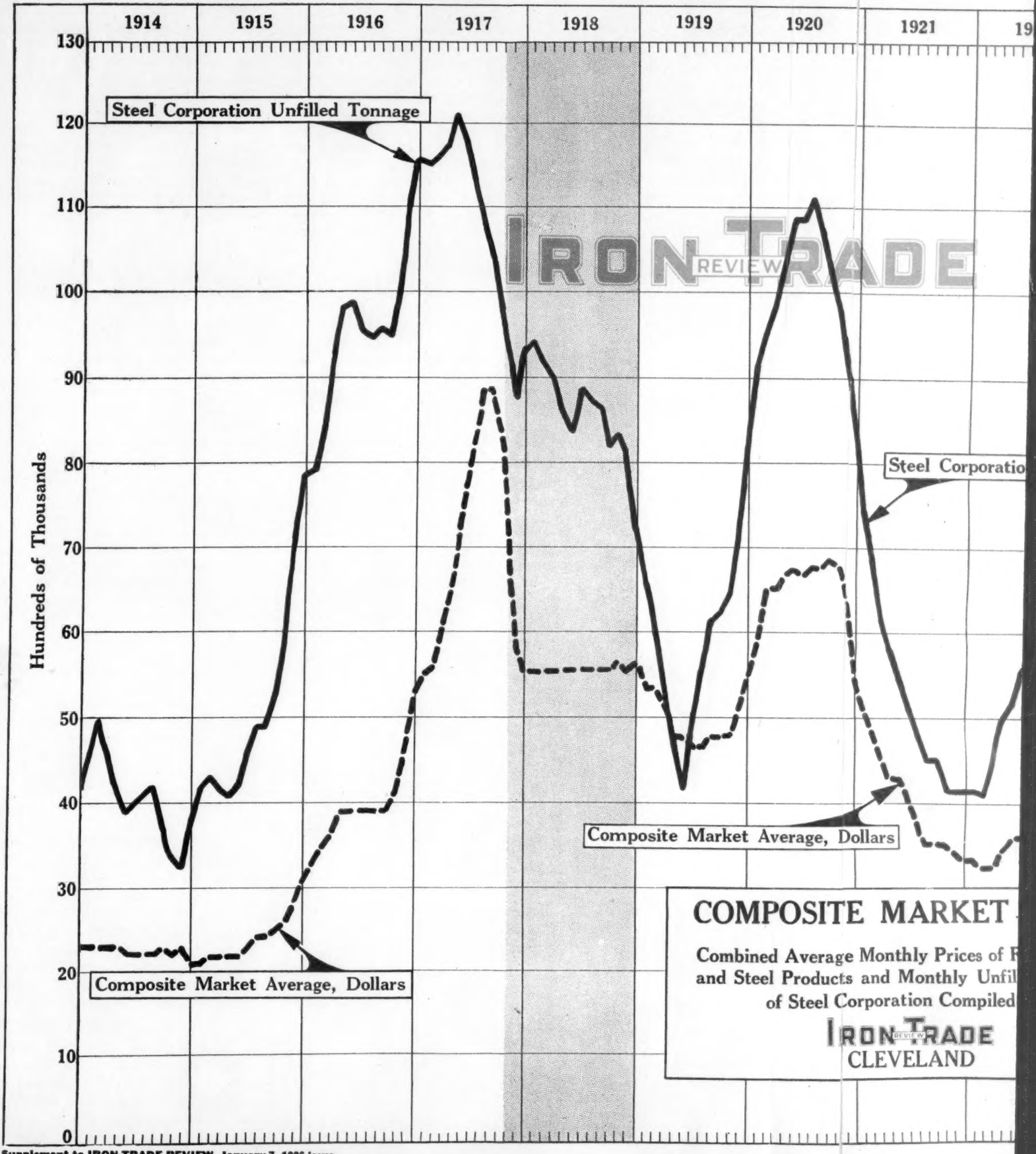
EXTREMES were present in the semifinished steel market last year, perhaps in even greater measure than in the finished lines. Producers ran the gauntlet from feast to famine within the first quarter, so that reduced buying in semifinished developed earlier and extended over a longer period.

The Year's Range

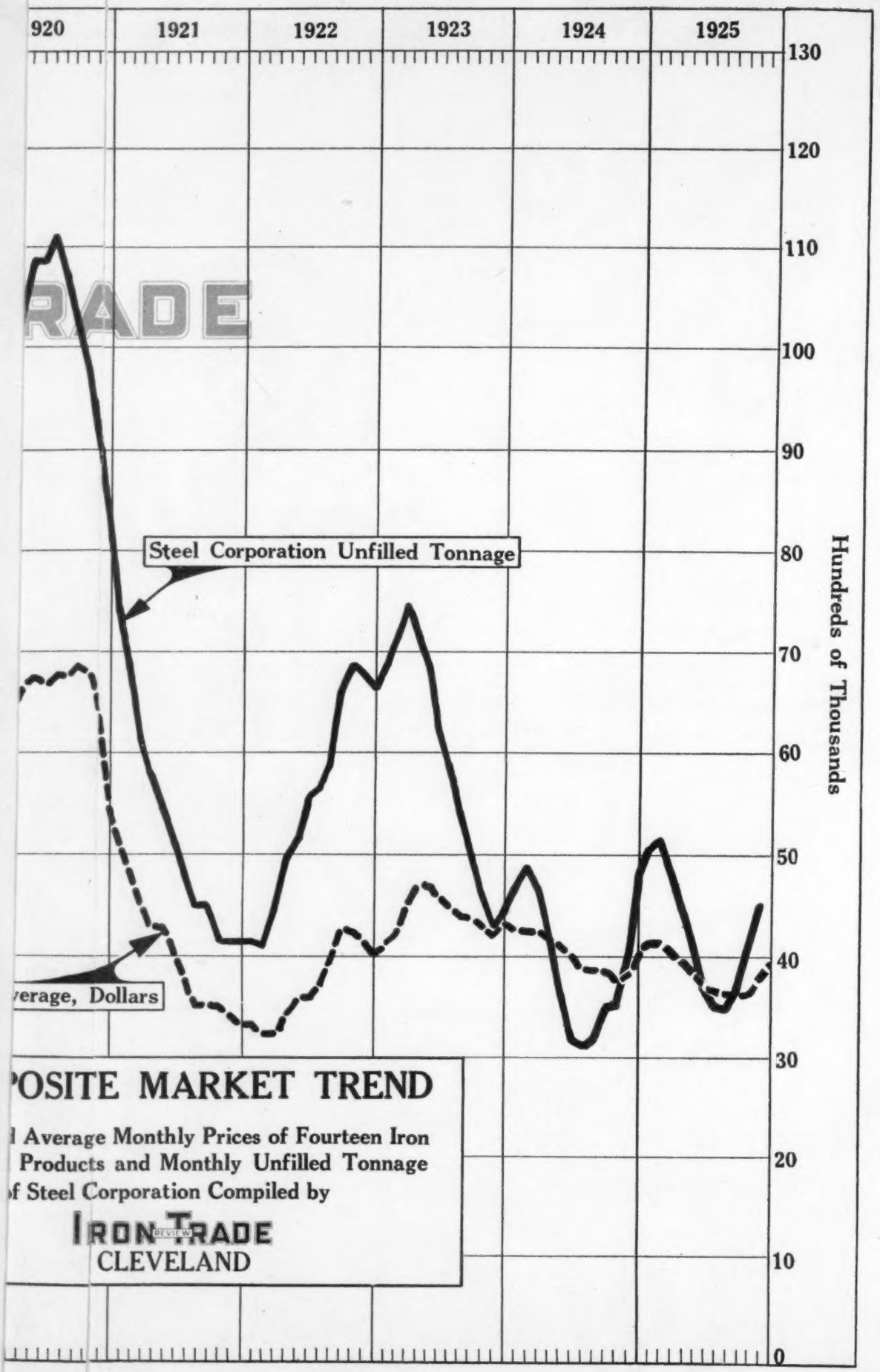
	High	Low
Sheet bars	$39.00	$35.00
Rerolling billets	38.00	33.50
Wire rods	48.00	45.00
Skelp	2.00c	1.70c

At the year's commencement, consumers were still acting under the impetus following the national election. They protected themselves heavily and by Jan. 10 makers had sold up to and beyond their possible output. By the middle of that month scarcity of semifinished material confronted buyers who had not contracted. The entire complexion of the market changed rapidly, however. By February demand shrunk measureably; customers commenced to withhold specifications in an effort to force down prices and instead of being sold up as they had thought, mills announced numerous open rollings. Only about 50 per cent of first quarter tonnage was specified in that period, and little contracting was done for second quarter. The large carryover on which price adjustments were made, with small spot buying, was sufficient to exceed consumers' greatly curtailed needs. Piecemeal demand existed well into third quarter and in some cases until December. Then contracting for first quarter of 1926 became so extensive that many producers were out of the market by Dec. 15.

Pittsburgh and Youngstown producers took turns supporting the market. Intermittent weakness broke out in Pittsburgh early in the year, but Youngstown sellers did not immediately follow. In the third quarter and early in the fourth, apparent weakness developed at Youngstown but this time most Pittsburgh makers



Supplement to IRON TRADE REVIEW, January 7, 1926 issue.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l Average Monthly Prices of Fourteen Iron
Products and Monthly Unfilled Tonnage
f Steel Corporation Compiled by
IRON TRADE REVIEW
CLEVELAND

resisted. Early in the year $40 was quoted at Youngstown on sheet bars and small billets, less $1.50 for 4 x 4-inch rerolling billets and 2 x 8-inch slabs. Pittsburgh prices were about $1 lower. Step by step prices receded until in June $35 was done on sheet bars and $33.50 on billets and slabs. In October and November, while Pittsburgh mills were holding to $35 on all three products, Youngstown makers went to $33.50 on sheet bars and $32.50 on the other products, taking large tonnages. The year closed with $36 named on the former and $35 on the latter for first quarter in both sections.

Demand for forging billets was more or less steady all year for oil well tools, gas engine shafts and other purposes. Usually the price was $5 above 4 x 4-inch rerolling billets although in December some announced $41, or $6 higher. One or two producers received as much as $10 higher for guaranteed forging quality.

While early in the year the open wire rod figure was $48, producers were well sold for first half with contracts at lower prices. Demand was fairly heavy and some makers could have taken on more if they could have spared them from their own wire and nail mills. An increase to $50 in February proved abortive, and by June $46 was named. In September some $45 prices appeared, to be supplanted by $46 later but $45 became the openly quoted figure for first quarter.

Large quantities of tubular skelp were sold, closed quietly with regular sources of supply, the inquiries never reaching the open market. The same thing was largely true of steel skelp. Prices in the main followed the plate market, from 2.00c to 2.10c being quoted in January; from 1.70c to 1.80c in the summer, and from 1.90c to 2.00c openly quoted as the year closed.

Pipe Demand Good

Prices Firm in Year—Building Activity and Pipe Lines Aided

FIRM mill prices practically all year on the bases quoted ever since April 19, 1923; a steadier demand than was experienced in 1924; an earlier comeback from the usual summer slump, which last year was of shorter duration in pipe than in any other steel product,—these are some of the features of the steel pipe market for 1925.

It is true that in second quarter some pipe jobbers indulged in a price war, liquidating heavy stocks at or below cost, expecting that mill prices would decline and they would be able to make replacements advantageously. By June some who bought at 60, 3 and 5 off were selling at 63 off, but no mill decline took place then or later.

Building programs were well sustained all over the country, keeping up an almost steady demand upon merchant pipe mills. These started the year with 75 per cent schedules; by February they were able to advance to 90 per cent; some declined to 65 per cent by May, rebounded in June to 90 per cent, but by late November and in December fell back again to 65 or 70 per cent. Line pipe orders of size were fairly frequent early in the year, involving 400 to 10,000 tons, and some larger makers, like the National Tube Co. and the Youngstown Sheet & Tube Co., had large backlogs of this type with which to enter the summer. It was the former to which was awarded the 41,000-ton order by the Andean Corp.

Most oil country jobber orders involved from three to 12 carloads at a time, the average oil well taking three carloads of tubular goods. The standard full weight merchant pipe jobber usually ordered in small lots but bought frequently. Some of the larger ones took as much as 10 carloads at once. October appeared to be the best shipping month of the year in a number of cases, in others, January was the heaviest.

Changes in Discounts on Steel Pipe

Jobbers, Carloads, Base, Pittsburgh

	Sizes in inches	Butt Weld — Basing Black	Butt Weld — Discount Galv.
Jan. 1, 1910 to Oct. 1, 1910	¾ to 6	78	68
Oct. 1, 1910 to Oct. 2, 1911	2 to 3	80	70
Oct. 2, 1911 to Dec. 1, 1911	2 to 3	81	74
Dec. 1, 1911 to Dec. 15, 1911	2 to 3	83	76
Dec. 15, 1911 to Jan. 1, 1912	2 to 3	83	76
Jan. 1, 1912 to July 1, 1912	2 to 3	82	75
July 1, 1912 to July 24, 1912	2 to 3	82	75
July 24, 1912 to Sept. 10, 1912	2 to 3	81	74
Sept. 10, 1912 to Jan. 1, 1913	2 to 3	80	72
Jan. 1, 1913 to April 12, 1913	¾ to 3	80	71½
April 12, 1913 to May 27, 1913	¾ to 3	79½	71
May 27, 1913 to Aug. 8, 1913	¾ to 3	79	70½
Aug. 8, 1913 to Oct. 27, 1913	¾ to 3	80	71½
Oct. 27, 1913 to Feb. 2, 1914	¾ to 3	80	71½
Feb. 2, 1914 to April 20, 1914	¾ to 3	79½	71
April 20, 1914 to Nov. 2, 1914	¾ to 3	80	71½
Nov. 2, 1914 to Feb. 11, 1915	¾ to 3	82	72½
Feb. 11, 1915 to May 1, 1915	¾ to 3	80	69½
May 1, 1915 to June 1, 1915	¾ to 3	79	68½
June 1, 1915 to June 17, 1915	¾ to 3	79	63½
June 17, 1915 to Aug. 15, 1915	¾ to 3	79	57½
Aug. 15, 1915 to Nov. 1, 1915	¾ to 3	79	63½
Nov. 1, 1915 to Jan. 4, 1916	¾ to 3	78	63½
Jan. 4, 1916 to Jan. 20, 1916	¾ to 3	77	62½
Jan. 20, 1916 to Feb. 15, 1916	¾ to 3	76	60½
Feb. 15, 1916 to Feb. 29, 1916	¾ to 3	75	59½
Feb. 29, 1916 to Mar. 15, 1916	¾ to 3	74	57½
Mar. 15, 1916 to Mar. 29, 1916	¾ to 3	73	55½
Mar. 29, 1916 to April 21, 1916	¾ to 3	72	53½
April 21, 1916 to July 24, 1916	¾ to 3	70	50½
July 24, 1916 to Sept. 7, 1916	¾ to 3	70	55½
Sept. 7, 1916 to Nov. 1, 1916	¾ to 3	69	55½
Nov. 1, 1916 to Nov. 15, 1916	¾ to 3	69	55½
Nov. 15, 1916 to Dec. 4, 1916	¾ to 3	68	54½
Dec. 4, 1916 to Dec. 30, 1916	¾ to 3	66	52½
Dec. 30, 1916 to Feb. 14, 1917	¾ to 3	64	56½
Feb. 14, 1917 to Mar. 5, 1917	¾ to 3	62	48½
Mar. 5, 1917 to April 2, 1917	¾ to 3	60	46½
April 2, 1917 to Nov. 6, 1917	¾ to 3	55	41½
Nov. 6, 1917 to Jan. 1, 1919	¾ to 3	51	37½
Jan. 1, 1919 to Mar. 21, 1919	¾ to 3	54	40½
*Mar. 21, 1919 to April 13, 1921	¾ to 3	57½	44
April 13, 1921 to July 7, 1921	1 to 3	62½	50
July 7, 1921 to Sept. 16, 1921	1 to 3	64½	52
Sept. 16, 1921 to Dec. 15, 1921	1 to 3	68½	56
Dec. 15, 1921 to Aug. 17, 1922	1 to 3	71	58½
Aug. 17, 1922 to Oct. 19, 1922	1 to 3	68	56½
Oct. 19, 1922 to Feb. 13, 1923	1 to 3	66	54½
Feb. 13, 1923 to April 19, 1923	1 to 3	64	52½
‡April 19, 1923 to date	1 to 3	62	50½

*Level adopted by independent companies Dec. 31, 1920.

‡Since Sept. 21, 1924, Pittsburgh and Lorain basing discounts, jobbers' carloads, Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net. Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Much Scrap Moved, Profit Small

Narrow Price Limits Marked Year and Speculative Bidding Failed to Yield Return in Sluggish Conditions—Alloy Steel From Automobile Scrap Becomes Factor—Failed as Market Barometer

IN tonnage 1925 was a good year for the iron and steel scrap industry but in returns it was not satisfactory. Generally speaking, the market moved within narrow price limits, yard costs increased and much speculative bidding above current levels for railroad scrap was not justified.

Some disturbing limitations appeared. Rolling mill business largely disappeared, reducing demand for wrought scrap and specialties. At Chicago there was virtually only one buyer of heavy melting steel most of the year. In eastern markets demand for cast grades was disappointingly light.

The tremendous production of automobiles was reflected in scrap. An increasing number of automobiles is being junked. Alloy steel in gears and other parts has made it necessary for plate mills, for example, to put up the bars. Automobile scrap is increasing and this situation, troublesome to certain users, probably will be cleared up this year.

At Chicago the scrap market was not the usual barometer in pig iron and finished steel. Cast scrap generally was highest when pig iron was lowest and in the early fall cast scrap, considering wastage, was higher priced than pig iron. Steel supplies at Chicago were plentiful most of the year and embargoes were frequent in the fourth quarter. Merchant furnaces were unusually heavy buyers of cast borings after coke soared. One steelmaker, short of pig iron, used car wheels freely in the open hearth.

The Year's Range

	High	Low
Heavy melting, Pittsburgh	$22.10	$16.00
Heavy melting, Chicago	19.45	14.90
Heavy melting, eastern Pa.	20.00	15.00

January, April and October provided greatest buying activity at Pittsburgh. Occasional sales to Youngstown and other Ohio points diverted scrap from Pittsburgh and strengthened the market. Sales at Pittsburgh were slack in midsummer and many steel works used 70 per cent pig iron and 30 per cent scrap, their own finishing mills coming close to supplying the scrap. Consumption of scrap increased when coke prices in the fall reacted to the anthracite strike.

The New England scrap market described a half moon. It opened the year with sales heavier than the last half of 1924, but by midsummer dropped lower than 1924, and by November had recovered to the January level. It is estimated New England sales of heavy melting steel ran 20 per cent under 1924. Cast grades, while sluggish, did not dip so badly.

Railroad offerings were heavy, Pennsylvania lists averaging more than 30,000 tons monthly. At times dealers offered $1.50 to $2 above the market for this material, and in many cases prices had not moved up when it was delivered.

Exports of scrap were light. Italy looked more to the Continent than to the United States. Obsolete ships being cut up abroad was one reason. Except for occasional shipments from nearby countries like Canada and Cuba, imports were light.

The year developed a tendency to cut up scrap with torches at its source rather than to ship it to yards for preparation.

By-Products Firm

Good Demand Prevailed Through Year—Prices in Unusual Fluctations

EXCEPTIONALLY good demand for coal tar by-products prevailed in 1925. Buying of motor fuel was perhaps the heaviest on record, while trading in industrial distillates was greater than in 1924. A feature was heavy buying of distillates by paint and lacquer interests, particularly of solvent naphtha and toluol. The shortage in these products caused the sharpest advance of the year, a gain of 9 cents within little more than a month during the fall. In fact, distillate prices had fluctuated little up to that time.

The Year's Range

	High	Low
Benzol	$0.26	$0.23
Toluol	0.35	0.26
Sulphate ammonia	2.95	2.37

The sharp advance in solvent naphtha and toluol had an unusual bearing upon the benzols, inasmuch as it forced the price on 90 per cent to a level with the market on pure benzol. Flake and ball naphthalene demand was well sustained, with little variation in prices.

Sellers of sulphate of ammonia experienced one of the best years

Coal Tar Products Market in 1925

F.o.b. Producer's Works

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Benzol	$0.25	$0.23	$0.24	$0.24	$0.24	$0.245	$0.25	$0.26	$0.25	$0.24	$0.24	$0.24
Toluol	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.33	0.35
Solvent Naphtha	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.33	0.35
Phenol	0.25	0.25	0.25	0.25	0.25	0.25	0.23	0.22	0.22	0.22	0.22	0.22
Naphthalene Flakes	0.0575	0.065	0.065	0.065	0.065	0.065	0.065	0.06	0.06	0.06	0.06	0.06
Naphthalene Balls	0.0675	0.075	0.075	0.075	0.075	0.075	0.075	0.07	0.07	0.07	0.07	0.07
Sulphate of Ammonia	2.675	2.625	2.525	2.525	2.425	2.375	*2.675	2.75	2.80	2.95	2.85	2.80

*Delivered basis, continuing throughout the remaining months.

since the war. With the agricultural industry back on a sound foundation, fertilizer manufacturers bought more sulphate than they had in several years.

Export buying was slack. During first half, when producers had good stocks, there was little export demand and during the latter part, when inquiry improved, little surplus material was available.

Spot prices underwent a moderate fluctuation, declining consistently during first half, to advance again, following the annual contracting period, this time to a high level for the year and then to fall off slightly during the final two months. An interesting development was the change of prices from a works to a delivered basis. This came in July, following complaints of confusion and misunderstanding as to what really constituted delivered cost.

Wire Range Small

New Basis Cause Differentials to Drop—Tendency Developed to Localize

DECENTRALIZATION of business in wire and wire products in 1925 was a consequence of the abandonment late in 1924 of the Pittsburgh plus method of quoting. There was a tendency for business to flow toward the points of lowest prices, the nearest mills, and where Pittsburgh mills accepted business, except for the Pacific coast, it was largely under a handicap. The tendency was for differentials over Pittsburgh prices to narrow.

Production was highest in first quarter. From 75 per cent mills dropped to about 45 per cent in June, recovering lost ground to about 70 per cent in December.

Wire and nail bases of 2.60c and 2.85c, Pittsburgh, for January advanced in February to 2.70c and 2.95c. By July the market was down to 2.50c and 2.75c. The $5 spread of nails over wire gradually gave way to $3, and 2.50c and 2.65c prevailed in the final months. Except for Duluth, where the differential was $2, and for Worcester, Mass., and Fairfield, Ala., where the differential was $3, prices in other districts were $1 over the Cleveland-Pittsburgh base.

The Year's Range

	High	Low
Nails, Pittsburgh.....	2.85c	2.65c
Wire, Pittsburgh.....	2.60c	2.45c

A leading cause of the severe summer recession was heavy jobber stocks from 1924 and early in 1925. Decline in export demand was another factor. European mills took over considerable business in Japan, South America and other markets. The summer slump in the bolt, nut, rivet and wood screw industry also contributed.

Florida was a bright spot in wire nails, wire mesh reinforcement, electrical cables and wire. Demand for wire mesh for building and road construction exceeded that of 1924 by 5 to 10 per cent and set a new high record.

Imports were fair. On the Pacific Coast they included mainly barbed wire and nails, while domestic mills furnished most of the manufacturers' wire. A considerable tonnage of nails was imported along the South Atlantic Coast, but at New York and elsewhere along the North Atlantic Coast, there seems to have been no actual business of importance.

Demand for wire fence was better than in 1924 but was unsatisfactory, in large part due to the depression in agriculture, in which relief became more apparent as the year wore on.

Cement-coated nails provoked most price competition. Typical of this situation was the drop at Pittsburgh from 2.25c in first quarter to 1.80c by third quarter. In the last quarter the market stiffened to 1.85c. Revision of extras on heavy wire by the leading maker in June was followed by the independents.

The year closed with mill stocks as low as at any time in 18 months, prices and demand showing improvement but order books lighter than at the close of 1924 when industry in general was feeling the stirring prompted by the presidential election.

Tin Plate at Peak

Production and Consumption 10 Per Cent Over Best Previous Year

CONSUMPTION and production of tin plate soared to new heights in 1925. The great vegetable trio—corn, peas and tomatoes—took more cans than ever before, approximately 65,000,000 cases being packed, and fruit and fish packs were abnormally large. To achieve the history-breaking record of a 39,000,000 base box output for the country which is about 10 per cent higher than the highest preceding year of 1923, tin mill operation was maintained more steadily at a high rate, a contrast to spasmodic 1924. Early in 1925 some were on a 70 per cent basis. These soon reached 90 per cent and from February onward, typical rates were from 85 to 100 per cent. The American Sheet & Tin Plate Co. often was much lower than some independents because its improvement program kept five mills off at a time for mechanical doubler installations.

The quoted market was unchanged throughout the year at $5.50 per base box, Pittsburgh, as announced Nov. 25, 1924, for first half, reaffirmed April 21 for last half, and again Nov. 19 for first half 1926, despite current expectations that high pig tin prices would warrant a raise of at least 15 cents a box. During the middle of the year, however, some independents who apparently needed business offered various price concessions and the desire was to have $5.50 a firm minimum before inaugurating advances. Past educational campaigns among customers brought results and early in the year specifications were furnished freely so that tin plate could be made up far in advance of needs. This practice was followed late in the year when much plate was rolled for 1926 requirements of larger container manufacturers.

Late in the year some large consumers covered their 1926 requirements, several million boxes being sold to oil producer and can makers, with $5.50 applying to first half and the price for second half to be adjusted later. Other bookings late in the year gave additional assurance of continued activity in the new year. At the close of the year important tin plate producers were operating practically at capacity, with others only slightly below.

Shape Activity Sets New Mark

Estimated Total of 2,285,207 Tons In 1925 Exceeded All Previous Annual Awards, Making the Fourth Successive Year that New Records Have Been Set— Despite Liberal Tonnage Plain Material Prices Were Lower

FOR the fourth consecutive year structural buying has exceeded all previous records. Figures compiled by the department of commerce show that the computed tonnage booked during the first ten months was 2,201,100 tons, compared with 1,893,700 tons for that period of 1924, and complete returns for the final two months are expected to show additional orders of at least 400,000 tons.

Despite the record breaking volume of structural business, shape prices were uniformly lower than in 1924. In only the first quarter alone did prices hold with any degree of consistency at 2.00c, Pittsburgh, or above. The 2.00c, price was frequently mentioned in reports throughout the remaining three quarters of the year. But practically always it represented the maximum of the range, and mostly a figure that could be shaded by at least ten points on sizable tonnage. During the third quarter in particular, shading of $4 and $6 per ton was noted in the East. The closing few weeks of the year saw greater strength but consistent efforts to establish the market firmly on a 2.00c Pittsburgh basis were largely unavailing. The high for the year was 2.10c, Pittsburgh, which compared with 2.50c for 1924.

In the Chicago district, shape prices opened at 2.20c, Chicago, rising to 2.30c at the end of January and dropping to 2.20c at the close of April. They dropped to 2.10c at the end of July and held there until the strengthening late in November. Prices at that

The Year's Range	High	Low
Shapes, Pittsburgh....	2.10c	1.90c

center did not fall quite as low as they did the year before. On the other hand they did not near reach the peak of 2.60c of 1924, and on a general average, were lower.

Competition among fabricators in the Chicago district was extremely sharp and while the volume of business was satisfactory, the profits were disappointing. This situation prevailed in almost every center in the country. In the New York metropolitan district where prices had become virtually demoralized as a partial result of competitive conditions more or less peculiar to that district, fabricators established the policy of quoting only on the lump sum basis, thus making it necessary for builders to have plans fully completed before coming into the market. This policy went into effect Nov. 1, and has proved beneficial.

Two of the most active months of the year were April and October, when according to the department of commerce, the computed tonnages for each month were 255,200 tons. The poorest months were January and February when the computed totals were 165,300 tons and 168,200 tons. Of the first ten months for which full returns are available, these two alone fell below the 200,000-ton mark.

General commercial building, such as lofts, offices and apartments again dominated demand. Railroad buying was relatively slack, and if anything a little under last year. Industrial work, on the other hand, was perhaps the best since the war, although still restricted. A larger industrial award was 16,500 tons for mills at Indiana Harbor, Ind., for the Youngstown Sheet & Tube Co. The largest commercial job involved 26,000 tons for an office building for the New York Life Insurance Co. in New York.

The most active center was the New York metropolitan district. Figures compiled by IRON TRADE REVIEW for the first half indicated that close to 35 per cent of the country's business was placed in New York state, and that the great bulk of this was awarded in New York and vicinity. Considerable activity was noted in the Chicago and Detroit districts, and due largely to the boom in Florida, a sharp improvement in the South. The Pittsburgh and Cleveland districts were comparatively quiet.

Following is a comparative statement of reported bookings:

	1925	1924	1923	1922
Jan.	147,079	176,732	179,375	72,100
Feb.	149,489	180,735	192,569	78,700
March	177,154	174,372	230,085	139,300
April	197,813	162,685	193,932	200,968
May	176,886	147,087	140,681	185,065
June	219,748	162,245	125,993	168,894
July	210,068	174,006	125,344	158,012
Aug.	199,618	150,769	143,814	156,559
Sept.	201,766	167,027	130,239	146,827
Oct.	215,486	166,367	122,153	133,037
Nov.	*190,000	213,247	132,772	112,367
Dec.	*200,000	201,090	195,721	138,737
	*2,285,207	2,076,362	1,912,678	1,690,566

*Estimated.

Bars Led Market

Sustained Demand and Production Above Other Finished Steel

SOFT steel bar prices were exceptionally steady in 1925 but production was broken up by a good first and last quarter and a moderate second and third. At both Pittsburgh and Chicago bar production topped plates and shapes at all times and the gap was widest in midsummer when plate and shape operations sagged considerably.

Conditions as 1925 opened were a result of the heavy buying late in 1924, prompted by the outcome of the presidential election. The result was less demand in second quarter but no comparable softening in price. March saw production highest of the year;

The Year's Range	High	Low
Bars, Pittsburgh.....	2.10c	2.00c

at Chicago bar output was highest for any month in history. Then came a decrease in April and succeeding months.

In the fall production increased, faithfully reflecting demand, and fourth quarter found deliveries almost as greatly deferred as in first quarter. At Pittsburgh the delivery situation in the last quarter pinched some consumers and independent makers benefitted by these conditions.

The Pittsburgh market was typical of the uniformity of prices. January opened at 2.10c, February averaged 2.05c, March saw a gain to 2.10c, April to July found the market back at 2.00c, August to October saw a further recession to 1.95c, while in November the market stiffened and over the last 60 days 2.00c to 2.10c prevailed. At Chicago the year opened at 2.10c, there was a short period of 2.20c and then 2.10c governed most of the remaining months.

Demand of the automotive industry for soft steel bars was well distributed, with a peak in the third quarter

and much less than the seasonal recession in the fourth quarter. The farm implement industry in 1925 bought bars heavily at Chicago in the third quarter and augmented these purchases by spot orders in the fourth quarter. Unusual activity in the building industry precipitated an extraordinary demand for reinforcing bars and warehouse shipments in 1925 came close to, if not actually, setting a record.

Of the total plate, shape and bar production in the Chicago district last year, soft steel bars formed about 49 per cent, compared with approximately 35 per cent in 1923.

As a result of stability of soft steel bar prices additional competition was stirred in the East. One company which had been specializing chiefly in alloy steel added plain carbon bars over a wide range of sizes. A new bar interest started operations at Eddystone, Pa., taking a number of important concrete bar jobs. A mill at Harrisburg, Pa., increased its output. An eastern structural mill began production of flat bars to some extent.

Foreign bars made heavy inroads along the gulf coast, especially Texas, and for some distance back of the seaboard drove out domestic bars. Eastern jobbers bought heavily of foreign bars, chiefly for concrete reinforcing. The largest eastern project to utilize foreign reinforcing bars involved 3600 tons.

The chief gains made by rail steel bars were in reinforced concrete and at Chicago practically all reinforced concrete jobs requiring 1000 tons or more used rail steel. At no time did the rail steel bar market get far from 2.00c, mill.

Bar iron lost further ground in 1925. The industry was hit hard in the first three quarters by the extreme slowness in railroad car buying but improved perceptibly in the last quarter when car orders came out in fair volume. Like rail steel, 2.00c, mill, probably was the 1925 average.

Plates Make Gain

Slack in Excess Capacity Being Taken Up—Car Awards Show Decline

THE end of 1925 finds the plate industry able to produce more tonnage than can be sold. Continued increased consumption of plates, however, has taken up much of the slack. The mills closed the year with a more satisfactory market than at any time since the war. Large Chicago and Pittsburgh mills in December were operating at around 85 per cent of capacity, with schedules four to eight weeks ahead. Even in the East, where the shipbuilding industry in the past has been the means of building up a big capacity, the mills closed the year with operations at about 70 per cent. Leading plate makers report that buying during fourth quarter was based almost entirely on actual needs. While there was some building up of stocks, it was entirely of a normal character and speculative buying which featured the last quarter of 1924 was lacking at the end of 1925.

January started with the market at 2.00c, base Pittsburgh. The high point, 2.20c, was reached in February. By the end of first half 1.90c had become general and during third quarter, 1.75c

The Year's Range	High	Low
Plates, Pittsburgh....	2.20c	1.75c

was done on much business. In December the market ranged from 1.80c to 2.00c, base Pittsburgh, with a tendency for the low prices to disappear. During third quarter, when new business was at a low ebb, eastern mills got to a general basis of 1.60c, base Pittsburgh, with concessions in special cases of $2 to $3 a ton. The steadiest conditions were reflected at Chicago where the market opened in January at 2.20c, Chicago, moved to 2.30c at the end of January, dropped slowly until 2.10c was reached the middle of July. The market hung at that point over the remainder of the year, with an impending advance in December to 2.20c.

A development of significance to plate makers was the installation of oil and electric locomotives by various railroads. For these locomotives no fire-box and boiler steel plates are required.

The average prices on plates during recent years, compared with the 10-year prewar average, is shown in the following table:

1925, base, Pittsburgh	1.933c
1924, base, Pittsburgh	2.142c
1923, base, Pittsburgh	2.417c
1922, base, Pittsburgh	1.729c
1904-1913, base, Pittsburgh	1.498c

Domestic freight car buying in 1925 declined materially, with indications pointing to about 80,000 cars, against 144,425 for 1924. It was by far the lightest year since 1921, when 22,050 were awarded. Export buying continued restricted. Following is a comparative statement of domestic awards from 1922 to 1925, inclusive:

	1925	1924	1923	1922
January	1,695	8,150	15,000	11,000
February	5,510	41,350	9,300	14,500
March	4,730	13,150	42,479	12,000
April	5,060	10,250	9,800	31,500
May	6,985	511	2,200	18,250
June	1,835	438	1,785	13,100
July	800	886	1,450	13,700
August	2,875	5,980	2,777	1,610
September	7,905	27,630	897	10,350
October	11,145	4,885	1,125	12,700
November	11,686	12,720	5,050	18,500
December	*20,000	29,034	11,600	23,255
Total	80,226	144,425	103,487	180,465

*Estimated

Locomotive demand was about equal to 1923 with sales above 1000. In 1923 the total was around 2000.

Cast Pipe Lower

Prices Under 1924—Foreign Tonnages Cut Deeply in Coast Business

FOREIGN competition for cast iron pipe in the United States never was heavier than in 1925. The Atlantic, Gulf and Pacific coasts carried the brunt of this but to Detroit, open to a water haul, European pipe penetrated. Estimated imports of foreign pipe in 1925 were 75,827 with sales exceeding this tonnage.

Shipments by domestic makers may have set a new high record. Buying in New England improved. Of the eastern cities, New York, was the

The Year's Range	High	Low
Birmingham	$42.00	$38.50
Chicago	50.20	46.10
New York	61.05	57.05

heaviest buyer. Second only to New York was Detroit, whose program prompted three awards, each 12,000 to 17,000 tons. Beginning with March bookings tapered to the low point in July. August saw improvement, which accelerated greatly in the final quarter.

Prices in 1925 ranged between $38 and $42, Birmingham, for 6-inch and over. This was several dollars under the average market for 1924. In the main, prices followed the southern pig iron market. Makers dipped $5 to $6 a ton under the domestic market to meet foreign competition at Detroit. The proportion of centrifugal to sand cast pipe increased over 1924.

Spot Buying Features Sheets

Specifications With Order Was Rule Most of Year—Heavy Decline of Spring Followed by Reaction in Fall—Good Operation Through Year—Agricultural and Automotive Buying Better

SALIENT features of the 1925 sheet market were numerous: the precipitate price declines of second and third quarters; the partial reaction and recovery in November; the absence of contracting accompanied by the practice of furnishing actual specifications, particularly on the part of the automobile industry; increased buying by agricultural implement makers, being better than at any time since the war; and the sustained buying by the automotive industry throughout the final quarter, or at a time usually marked by decline in such purchases. Whereas the big buying month of 1924 came in November, this developed a month earlier in 1925, October proving to be the best month in two years for many prominent sheet manufacturers. This was because customers were given opportunity to anticipate their then-growing requirements prior to the inauguration of price advances, which at that time became possible.

The Year's Range

	High	Low
Blue annealed, Pittsburgh	2.70c	2.20c
Black, Pittsburgh	3.50c	3.05c
Galvanized, Pittsburgh	4.75c	4.05c

The year started with a specifying rate sufficient to support 85 to 90 per cent operation. During the summer this descended to 50 to 60 per cent, but by early December 95 per cent prevailed. In January the outlook was particularly bright and promised continuance. Contingent upon this, independent sheetmakers raised prices and they were followed by the American Sheet & Tin Plate Co., with a $2 increase Jan. 29, the new levels being 2.80c, 3.70c and 4.85c on blue annealed, black and galvanized, respectively. Full-finished were left alone at 4.75c. This advance proved a fiasco. Early in February some independents commenced to offer concessions. This served further to undermine the confidence of sheet purchasers. Buying was entirely upon a hand-to-mouth basis. Efforts to find a common price basis were numerous, each time at a lower level until black sheets got down to 3.05c; blue annealed 2.20c; galvanized, despite high spelter cost, to 4.05c; and full finished to 4.25c. During that period the leading interest often refused to go as low as some independents, and many times obtained $2 or more per ton higher. Several companies for a time discontinued galvanizing entirely but this lent further weakness to the black sheet market. In June some efforts were made to stem the tide. Some minimums commenced to creep upward but these efforts did not gain much real momentum until late October and early November. Several successive increases of $2 to $4 per ton then were made. Oct. 9 the leading interest raised blue annealed and galvanized. By Nov. 19 the market had stiffened and it announced first quarter prices effective at once, blue annealed at 2.50c; black at 3.35c; galvanized at 4.60c; and full finished at 4.50c. Some independents for a time continued to take business at slightly lower levels but soon were filled up. The closing weeks found those levels applicable to limited spot tonnage and to first quarter requirements.

Year's Sheet Situation Summarized

Total hot mills U. S.	Figures represent per cent of total hot mills	Month 1925	Sales	Per cent of capacity	Production	Per cent of capacity	Shipments	Per cent of capacity
709	74.8	October	403,491	127.3	348,714	106.4	332,211	104.8
708	74.9	September	286,029	89.6	295,810	92.7	262,050	82.1
699	75.6	August	239,492	77.3	270,212	87.2	243,204	78.5
699	75.3	July	252,871	80.1	246,404	75.5	223,454	70.8
699	75.7	June	286,453	92.8	266,290	83.4	231,606	74.9
699	75.4	May	186,538	62.3	260,470	87.0	232,372	77.6
701	73.3	April	193,949	60.6	280,082	87.5	263,174	82.2
701	73.3	March	263,666	85.2	290,308	90.7	279,437	90.3
701	73.5	February	235,980	83.1	283,290	96.5	255,080	89.8
701	75.6	January	241,040	74.4	317,424	98.0	283,645	87.6
		1924						
701	74.4	December	350,868	111.6	259,794	82.6	229,573	73.0
686	73.5	November	462,709	164.0	224,931	79.7	219,228	77.7

Roll Longer Rail

Change in Specification Being Generally Adopted—Alloys Less in Demand

AN INCREASE in the length of the standard rail from 33 to 39 feet was the important development in the rail market during 1925. The first 39-foot rails were rolled in 1924, and since then their use has increased rapidly. Some of the larger trunk lines are specifying 39-foot lengths on substantially 50 per cent of their 1926 tonnage. The longer rails bring about a reduction of about 16 per cent in the number of rail joints, saving about one-sixth of the total expenditure for track fastenings, and giving a corresponding reduction in the expense of track upkeep.

Adoption of the new standard has been an expensive procedure for the steel companies. The longer rails have necessitated changes in the location of saws, lengthening of hot beds and changes in straightening machines and other rail finishing equipment.

Use of alloys has diminished to a point where it is practically negligible. Chromium, titanium, nickel and other alloys have been eliminated from most rail steel specifications. Most tonnage rolled during 1925 was high carbon steel. The only noteworthy exception is in the case of rails for curves where traffic is exceptionally severe; in such cases some tonnage of high manganese rails continues to be employed.

Rail makers are still far from having eliminated the seasonal curve in rail delivery. Mills operated on substantially full schedules during first half. Then there was a lull until

November. As a matter of fact, production during the first half of 1925 was record breaking. The year as a whole showed a substantial gain over 1924 but did not measure up to 1923, the largest year since the war. Orders closed during the last quarter of 1925 indicated the 1926 rollings would be on about the same scale as 1925. The price through 1925 and into 1926 continued $43, base mill, per gross ton, equivalent to 1.92 cents per pound.

Light rail demand was slow until September when improvement manifested itself as a result of increased coal mining operations. October showed some continuation of this improved buying but the year's close was quiet. At the start of the year the pound price was 1.80c or $40.32 per gross ton. Thereafter, quotations on a gross ton basis became general. The low of the year was about $36. Toward the close the price was $37 to $38.

Track fastenings paralleled rail activity. Standard spikes started the year at 2.90c base Pittsburgh and declined to 2.80c. Small spikes were quoted at 3.10c but went to 2.90c to 3.00c toward the end of the year. Track bolts were 3.90c to 4.25c practically all year. The tie plate price was stationary at 2.35c.

Light Rail Prices by Quarters, 1916-1925

Per Pound And Per Gross Ton

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Jan. 1.....	1.55c	$50.00	3.00c	2.75c	2.45c	3.00c	1.50c	2.15c	2.10c	1.80c
April 1.....	2.10c	55.00	3.00c	2.45c	3.25c	2.50c	1.60c	2.25c	1.95c	1.70c
July 1.....	$47.00	$70-$80	3.00c	2.45c	3.75c	2.20c	1.75c	2.25c	1.90c	1.70c
Oct. 1.....	47.00	75.00	3.00c	2.45c	3.50c	1.65c	2.15c	2.15c	1.80c	1.60c

Duty Aids Alloys

Enlarged Production of Domestic Manganese Ore Develops as Result

A FEATURE of the ferroalloys markets in 1925 was domestic production of manganese ore. Despite statements that the duty of 1 cent per pound of contained manganese was not having an effect on domestic production, an investigation by IRON TRADE REVIEW, shows that a real industry has been created. Reports from producers show domestic production at least 10,000 tons per month, of which about 7500 tons were being shipped for metallurgical use and the remainder to battery and paint manufacturers and other interests. Most of this domestic ore contained more than 37 per cent manganese and much of it contained 50 per cent or more. In addition, duty free ore for metallurgical use has been coming in at the rate of about 2000 to 2500 tons a month from Cuba and Porto Rico. Thus, production of duty free ore has been at the rate of nearly 150,000 tons annually. Plans for expansion now under consideration may push the output substantially higher.

Imports and Domestic Production of Manganese Alloys—Imports of Manganese Ore

In Gross Tons

	Production		Imports		Imports
	Ferro-manganese	Spiegel-eisen	Ferro-manganese	Spiegel-eisen	Manganese ore
1925*	253,590	63,279	†77,597	.....	‡289,703
1924	199,418	107,135	†47,811	.....	‡231,393
1923	242,450	123,148	91,066	4,668	‡206,048
1922	150,039	68,589	95,007	8,157	374,451
1921	100,694	55,042	9,057	307	401,000
1920	286,365	110,685	59,254	5,234	601,437
1919	175,009	84,014	33,022	27	333,344
1918	325,133	303,535	27,168	.....	491,303
1917	328,000	187,000	51,800	.....	663,500
1916	275,204	187,233	90,928	.....	576,321
1915	144,260	114,556	55,263	200	313,985
1914	100,731	76,625	82,997	2,870	283,294
1913	119,495	106,980	128,070	77	345,090
1912	125,378	102,561	99,137	1,015	300,661
1911	74,602	104,013	80,263	20,970	176,852
1910	71,376	153,055	114,228	25,383	242,348
1909	82,209	142,831	88,934	16,921	212,765
1908	40,642	111,376	44,624	4,579	178,203
1907	55,918	283,430	87,400	48,994	209,021
1906	55,520	244,980	84,359	103,268	221,260
1905	62,186	227,797	52,841	55,457	257,033

*Estimated †Includes Spiegeleisen. ‡Manganese content.

In ferromanganese an unusual number of sellers competed. Norway, where a subsidiary of the Union Carbide & Carbon Corp., New York, began producing electric furnace ferromanganese in 1924, has increased its shipments to the United States. British and Canadian shipments continued undiminished. In addition to the regular domestic merchant maker, E. J. Lavino & Co., two steel companies made ferromanganese for the market, but had withdrawn by the end of the year. Business of moderate size was booked by German makers who are regular factors in our market. Some Indian ferromanganese also was sold here. Despite all this competition the price was unusually steady. The year started with the market at $110, duty paid tidewater, equivalent to $114.79 delivered at Pittsburgh but early in January there was an advance of $5. The price of $115, duty paid tidewater, was maintained the remainder of the year although during second and third quarters concessions were granted in some exceptional instances.

Another development was the definite signing of the contract by the Russian soviet government with W. A. Harriman & Co., New York, under which the latter interest obtains a monopoly on the production and sale of Georgian manganese ore for 20 years. This company organized the Georgian Manganese Co., Ltd., with headquarters in New York. The latter placed the sale of the ore in this country with the Iron & Ore Corp. of America, which company is associated with Wm. H. Muller & Co., Inc.

One producer, the New Jersey Zinc Co., again was the principal source of supply for users of spiegeleisen. The full range of prices was $31 to $34, furnace, for 20 per cent, which did not permit serious competition from abroad. Hand-to-mouth buying featured spiegeleisen and ferromanganese most of the year but in November and December conditions had so improved that most consumers considered it wise to contract for first quarter or first half of 1926.

In December many consumers found supplies diminishing and requests were made for anticipation of deliveries, especially in spiegeleisen. Requirements for 1926 in chrome and silicon alloys were looked after in December to a point of nearly covering most important users.

Metals Reach Highest Activity

Prices Best Since 1920 and Earnings Attain High Mark—Market Values Reach New Stability and Fluctuations Were in Narrow Range—Exports to Europe Factor in American Production

NONFERROUS metal industries attained their highest level of activity in 1925. Prices averaged higher than in any other period since 1919-20, and metal producing companies paid larger dividends than in several years.

Increased prices were second in significance to the stability in market values. Price changes were frequent, in fact daily or almost hourly, in accord with the nature of the metal markets, ruled by circumstances that are world-wide, but these changes were unusually narrow. Copper, for instance, sold higher on a number of occasions since the war than at any time in the past year, yet this is the first recent year that it did not fall to 13.00c a pound or well below. This reflected steady output and shipments through the year, and the latter in turn were due to a relatively stable and prosperous condition of business

Good business in Europe early in the year resulted in tremendous exports from the United States and other countries of the western hemisphere. Toward the end of the year poor business and financial conditions abroad, despite a steady mend in international relations, caused setbacks in export trade, especially copper. In Europe as well as the United States, expansion in the use of electricity was one of the greatest factors in the prosperity of the metals. However, in this country electric expansion was relatively less important in copper consumption than in 1924, though more than half of the metal continued to go into that use. The big lead market also was due in large part to the use of this metal for covering cables. Manufacturing capacity of many metal product makers have been increased in the past few years and new wire mills have been built, so that use of metals in many instances has been larger than during the war but with factories and mills less rushed, this fact has not been appreciated.

Copper—The red metal sold above 14.00c most of the year as a result of the greatest demand American producers ever were called on to fill. Although the price did not reach the prewar level of over 15.00c, it was sufficient in view of increased efficiency of methods of recovery and of labor, to afford a profit to nearly all mines and stimulated output to more than 1,300,000 tons, a higher figure than attained before even in the war period. Exports of copper for more than a year have been running much heavier than in 1913, the record year before the war. Domestic shipments of copper, not yet known exactly, were at least close to 800,000 tons, or greater than in any other year except 1918. To fabricate this copper rolling mills worked at a tremendous rate, and the margin between ingot metal and products was a little wider than in the previous year, but competition remained severe and much of the time there was deep cutting of prices to obtain especially desirable orders. In this respect conditions improved, particularly in copper products, toward the end of the year. In brass products the increased price of zinc in the latter part of the year was so great as to offset more than the easiness in copper. Brass foundries also did a big business but competition appeared to be more severe than among the mills, and at times their operations were at a much lower precentage of capacity. Stocks of copper were greatly reduced until the past month or two.

Zinc—With the stimulus of the highest prices since 1920, the zinc industry produced at the highest rate since 1917. Export business was good, but not as large as at times in the war period and since. In the past year continental smelters began to buy large quantities of zinc ore here, causing the ore market to be unusually strong and not affording the smelters so great profit as the increase in price of prime western slab would indicate. Brass mills used an unusually large quantity of zinc. Galvanizers did a good business, especially in the early and late months, and it was largely the shortage of metal among galvanizers, with consequent concentration of buying, that shot the price up in the autumn. Despite larger output, stocks almost vanished.

Tin—Tin sold at the highest prices since 1919 on account of big demand. Use remained unusually steady and producers had difficulty keeping up but high prices have stimulated output in all parts of the world.

Lead—Lead was in great demand for batteries for radio sets and automobiles, for electric cable covering, and for paint. Minor uses such as babbitt, solder, sheets and pipe, also were active. These demands, in the face of few major discoveries of lead deposits in the past few years, caused the metal to sell at the highest average price in nearly a lifetime, not excepting the war, though at times the price in that period was higher than at any time since. The steadiness of the market above 9.00c in most months, stimulated output so that in the latter part of the year the supplies were a little freer.

Average Monthly Nonferrous Prices in 1925

(Prompt, wholesale lots, cents a pound)

Chart of Prices for past years elsewhere in this issue

	1924	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.†
Tin, spot Straits, New York....	$50.175	$58.242	$57.117	$53.715	$52.201	$54.642	$55.87	$58.076	$58.178	$58.27	$62.258	$63.285	$63.50
Copper, electrolytic delivered....	13.307	15.017	14.742	14.295	13.533	13.610	13.655	14.197	14.759	14.658	14.544	14.628	14.12
Zinc, prime western, E. St. Louis	6.35	7.762	7.50	7.349	7.001	6.958	6.99	7.215	7.59	7.762	8.328	8.719	8.60
Lead, open market, New York	8.313	10.392	9.371	8.903	7.986	8.145	8.41	9.377	9.87	9.585	9.589	9.856	8.50
Aluminum, 98-99%, delivered*..	26.95	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.285	28.00	28.00
Antimony, spot, New York.....	10.717	17.332	19.694	15.431	12.481	16.428	16.60	17.576	17.589	17.038	17.923	19.927	20.25
Nickel, ingot.....	28.54	31.00	31.00	31.00	31.00	31.00	33.00	34.00	34.00	34.00	34.00	34.00	34.00

*Open market; producer's prices averaged $26.81 in 1924; both were practically identical through 1925.
†Only early part of month included.

Market History Told by Prices

Ores and Alloys

Per Gross Ton

Spiegeleisen, 1915-1925

At Producers' Furnaces

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$32.00	$33.00	$33.00	$33.00	$33.00	$32.00	$31.50	$32.25	$33.00	$33.00	$34.00	$34.00
1924.....	39.00	39.00	38.00	36.00	36.75	36.00	35.00	32.50	32.00	31.00	31.75	31.00
1923.....	34.50	35.75	37.25	39.25	43.00	46.00	45.00	45.00	43.50	40.00	39.00	38.00
1922.....	25.50	28.00	28.00	30.00	35.00	35.25	35.00	37.00	38.00	37.75	36.80	35.50
1921.....	46.25	37.75	34.20	32.00	31.75	29.60	27.50	26.20	25.25	24.85	25.00	25.00
1920.....	46.60	57.60	60.40	66.85	75.00	75.00	75.00	79.35	82.00	80.00	74.35	57.90
1919.....	*67.50	*52.50	*42.50	*34.50	*31.35	*27.50	34.00	34.00	34.00	34.00	34.00	39.00
1918.....	59.00	59.00	65.50	*70.00	*71.00	*75.00	*75.00	*75.00	*75.00	*75.00	*75.00	*72.50
1917.....	57.50	66.25	77.50	76.75	78.00	83.00	85.00	81.25	80.50	73.50	63.25	60.00
1916.....	32.50	42.50	55.00	60.00	60.00	55.00	47.50	47.50	45.00	40.00	45.00	50.00
1915.....	25.00	25.50	26.00	26.00	26.00	26.00	26.00	26.00	29.00	30.00	30.00	30.00

* Prices from and including April, 1918, and to and including June, 1919, are for 16 per cent spiegeleisen. All other prices apply to 20 per cent metal.

Ferrosilicon, 10 Per Cent, 1916-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$39.50	$39.50	$39.50	$37.50	$35.50	$35.50	$35.50	$35.50	$34.00	$33.50	$34.25	$35.00
1924.....	41.50	42.50	42.25	41.50	40.30	39.50	39.50	39.50	39.50	39.50	39.50	39.50
1923.....	44.50	45.50	47.10	48.50	48.50	48.00	46.50	43.50	43.50	43.50	41.50	41.50
1922.....	38.50	37.50	36.50	37.25	40.50	41.50	41.50	42.50	48.50	50.00	48.00	44.50
1921.....	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	52.50	57.50
1920.....	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50
1919.....	54.00	54.00	52.95	47.40	45.00	47.40	49.75	49.75	49.75	49.75	54.75	58.50
1918.....	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	57.00	57.00	57.00
1917.....	42.00	42.00	49.80	57.00	67.00	82.50	92.25	95.00	95.00	80.00	55.00	55.00
1916.....	28.00	28.00	31.00	31.00	32.00	32.00	32.00	31.80	30.25	30.50	34.60	42.00

Ferrosilicon, 50 Per Cent, 1916-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00
1924.....	75.00	75.00	75.00	75.00	75.00	75.00	74.50	74.50	74.50	75.00	75.00	82.50
1923.....	85.00	90.00	92.50	95.00	95.00	87.50	82.50	82.50	82.50	82.50	80.00	75.00
1922.....	57.50	55.00	54.00	55.00	57.50	57.50	55.00	55.00	55.00	70.00	82.50	82.50
1921.....	80.00	92.00	93.00	90.00	80.00	75.00	75.00	65.00	65.00	60.00	60.00	57.00
1920.....	82.00	80.00	83.00	80.00	83.00	82.50	82.50	80.00	82.50	82.50	80.00	80.00
1919.....	145.00	125.00	115.00	110.00	100.00	85.00	80.00	78.00	80.00	85.00	80.00	80.00
1918.....	175.00	175.00	177.50	172.50	170.00	170.00	165.00	153.50	150.00	151.00	150.00	150.00
1917.....	122.50	156.25	175.00	187.50	230.00	230.00	237.50	225.00	212.50	171.25	157.50	172.50
1916.....	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	94.25	95.00	95.00

Ferrochrome, 4-6 Per Cent, 1918-1925

Per Pound of Metallic Chromium Contained

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c	11.50c
1924.....	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75
1923.....	12.50	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
1922.....	14.50	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	13.00	13.50	13.50
1921.....	17.50	17.25	17.25	16.25	16.00	15.00	15.00	14.00	14.50	14.50	14.50	14.50
1920.....	22.50	19.50	19.50	19.50	18.50	18.50	21.50	20.00	18.50	18.50	18.50	18.50
1919.....	41.00	32.50	31.00	31.00	32.00	32.00	32.00	32.00	29.00	29.00	28.00	28.00
1918.....	.....	.....	.....	.....	.....	.....	44.00	41.00	41.00	41.00	41.00	41.00

Ferromanganese, Pittsburgh, 1914-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$116.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79	$119.79
1924.....	113.79	112.29	112.29	112.29	112.29	112.29	110.79	98.79	97.79	104.79	107.29	109.79
1923.....	109.79	112.29	120.79	124.79	129.79	129.79	122.29	122.29	114.79	112.79	113.79	113.79
1922.....	61.90	65.32	67.82	69.07	72.32	72.82	72.29	72.29	†80.59	105.47	104.92	104.92
1921.....	101.00	96.85	89.00	87.50	83.00	76.50	75.00	70.75	64.75	61.65	60.00	60.00
1920.....	146.00	160.00	172.00	200.00	200.00	198.00	190.00	193.75	172.40	156.40	153.00	120.00
1919.....	*212.50	165.00	134.00	113.75	110.00	111.75	111.00	110.00	105.00	110.00	110.00	121.00
1918.....	250.00	250.00	250.00	250.00	*250.00	*250.00	*250.00	*250.00	*250.00	*250.00	*250.00	*236.00
1917.....	175.00	192.50	212.50	250.00	375.00	400.00	400.00	387.50	380.00	300.00	247.50	242.50
**1916.....	139.88	215.13	334.75	412.50	347.75	244.88	198.75	173.18	167.67	160.00	155.00	162.50
1915.....	68.00	78.80	95.00	95.00	97.00	105.00	103.57	101.36	110.00	109.64	100.42	103.04
1914.....	43.57	39.01	39.02	38.68	38.16	38.00	37.54	102.08	93.45	70.80	67.85	68.00

* Prices from May, 1918, to January, 1919, inclusive, were based on 70 per cent ferromanganese. All other prices in above table were based on 80 per cent metal.

† Duty of 1¼ cents per pound contained manganese became effective on ferromanganese Sept. 21.

** Quotations seaboard to Jan., 1917, delivered Pittsburgh thereafter.

Market History—

Ferrotungsten, 1918-1925

Per Pound of Metallic Tungsten Contained

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$0.86	$0.88	$0.93	$1.02	$1.00	$1.01	$1.07	$1.07	$1.10	$1.11	$1.12	$1.15
1924.....	0.87	0.86	0.88	0.90	0.91	0.90	0.89	0.87	0.87	0.87	0.87	0.87
1923.....	0.87	0.87	0.89	0.90	0.92	0.92	0.95	0.88	0.87	0.87	0.87	0.87
1922.....	0.42	0.37	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.85	0.92	0.92
1921.....	0.65	0.57	0.57	0.47	0.47	0.50	0.50	0.47	0.36	0.36	0.36	0.36
1920.....	1.05	1.05	1.00	1.00	1.05	1.07	1.12	1.10	1.10	0.95	0.95	0.95
1919.....	2.35	2.15	2.07	1.75	1.40	1.32	1.30	1.22	1.25	1.25	1.20	1.15
1918.....	1.95	2.72	1.98	2.32	2.26	2.23	2.25	2.32	2.32	2.55	2.65	2.45

Manganese Ore, 1915-1925

Dollars Per Gross Ton, c.i.f. North Atlantic Ports, on Basis of 50 Per Cent Ore

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$32.20	$32.70	$33.20	$33.20	$32.70	$32.20	$32.20	$32.20	$31.70	$31.70	$31.70	$31.70
1924.....	31.20	32.70	23 20	32.20	32.20	31.70	30.70	30.20	30.20	30.20	31.70	32.20
1923.....	29.45	29.45	31.70	33.20	32.70	32.95	32.95	32.95	31.70	31.70	31.70	31.70
1922.....	10.50	11.00	12.50	12.75	12.75	13.25	13.50	13.75	*14.35	25.50	25.50	25.50
1921.....	18.75	17.50	17.25	14.00	14.00	12.50	12.50	12.50	12.50	12.50	12.50	12.00
1920.....	30.00	38.75	38.75	32.25	35.00	37.50	42.25	35.00	35.00	32.75	25.00	21.25
1919.....	55.50	38.75	37.50	30.00	30.00	30.00	31.25	31.25	30.00	27.50	27.50	27.50
1918.....	63.75	63.75	60.00	65.00	65.00	65.00	68.50	65.00	65.00	65.00	62.50	55.00
1917.....	30.00	30.00	40.00	40.00	50.00	50.00	50.00	50.00	60.00	60.00	60.00	60.00
1916.....	22.50	22.50	22.50	22.50	22.50	22.50	22.50	22.50	30.00	30.00	30.00	30.00
1915.....	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	22.50	22.50	22.50	22.50

* After Sept., 1922, duty 1c per pound metallic content, $11.20 per gross ton 50 per cent ore.

Pig Iron

Per Gross Ton

Basic, Pittsburgh, 1902-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$23.66	$23.76	$23.16	$21.96	$20.66	$19.96	$19.76	$19.76	$20.06	$20.56	$21.66	$21.76
1924.....	23.16	23.76	23.46	23.46	22.46	21.76	20.76	20.76	20.76	20.76	21.01	22.26
1923.....	27.67	27.87	31.57	32.77	31.57	29.12	26.92	26.77	26.77	25.52	22.57	22.77
1922.....	20.31	19.81	19.86	22.21	26.46	26.96	26.76	27.96	34.27	32.37	29.77	26.77
1921.....	31.46	28.71	26.56	24.81	23.96	23.16	20.81	20.96	21.56	21.16	20.96	20.71
1920.....	39.20	43.65	44.40	44.40	44.65	45.15	47.40	49.40	50.45	47.21	39.46	34.96
1919.....	31.00	31.40	30.35	27.15	27.15	27.15	27.15	27.15	27.15	27.15	30.40	35.40
1918.....	33.95	33.95	33.95	32.95	32.95	33.20	33.40	33.40	33.40	34.40	34.40	34.40
1917.....	30.95	30.95	32.85	39.20	42.14	50.20	53.20	52.75	43.95	33.95	33.95	33.95
1916.....	19.20	18.77	19.20	19.20	18.95	18.95	18.95	18.95	19.08	20.83	25.95	30.95
1915.....	13.45	13.45	13.45	13.45	13.45	13.54	13.83	14.89	15.65	15.95	16.70	18.55
1914.....	13.42	14.09	13.96	13.90	13.90	13.90	13.90	13.90	13.90	13.75	13.45	13.45
1913.....	17.40	17.29	17.03	16.77	16.15	15.46	15.25	15.07	15.09	14.85	14.09	13.65
1912.....	13.28	13.30	13.44	14.00	13.00	13.40	14.40	14.85	15.33	16.95	17.12	17.40
1911.....	14.40	14.46	14.46	14.46	14.32	14.12	13.77	13.90	13.70	13.42	13.37	13.26
1910.....	17.90	17.77	17.20	16.65	16.20	15.70	15.27	14.95	14.70	13.96	14.28	14.20
1909.....	16.75	16.50	16.00	15.75	15.00	15.50	15.75	17.00	18.00	18.50	18.50	18.75
1908.....	17.25	16.90	16.90	16.50	16.40	16.25	16.00	15.90	15.50	15.10	16.40	16.40
1907.....	23.05	22.85	22.85	22.85	23.65	24.15	23.25	22.20	21.40	20.65	19.25	18.40
1906.....	18.20	17.95	17.85	17.85	17.85	17.85	17.95	18.40	18.95	20.70	22.20	22.85
1905.....	16.75	16.35	16.15	16.10	16.10	15.55	14.90	15.20	15.75	16.20	17.85	18.10
1904.....	13.70	13.35	13.75	13.95	13.35	12.50	12.20	12.60	12.50	12.90	14.80	20.40
1903.....	21.80	22.10	21.95	21.45	20.20	20.00	19.40	16.20	16.85	15.95	15.00	13.95
1902.....	20.60	17.00	17.35	18.35	16.60	21.50	21.45	21.45	21.50	21.55	21.75	21.75

Bessemer, Pittsburgh, 1895-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$24.66	$24.66	$23.96	$26.76	$21.66	$20.76	$20.76	$20.76	$21.06	$21.56	$22.66	$22.76
1924.....	24.66	25.01	24.86	24.61	24.06	23.26	21.66	21.76	21.76	21.76	22.11	23.26
1923.....	29.27	29.57	31.67	32.77	32.07	30.27	28.52	28.07	28.27	27.27	25.47	24.27
1922.....	21.51	21.31	21.21	22.46	26.46	26.96	26.76	29.16	35.27	35.12	27.77	30.33
1921.....	33.96	30.96	28.96	27.46	26.06	25.06	22.96	21.96	22.46	22.06	21.96	21.96
1920.....	40.00	43.15	43.40	43.50	43.90	44.25	46.80	49.50	50.45	50.17	42.33	36.96
1919.....	33.60	33.60	32.55	29.35	29.35	29.35	29.35	29.35	29.35	29.35	32.00	36.65
1918.....	37.25	37.25	37.25	36.15	36.15	36.40	36.60	36.60	36.60	36.60	36.60	36.60
1917.....	35.95	35.95	37.45	42.20	44.95	55.20	57.95	55.55	48.27	37.25	37.25	37.25
1916.....	21.32	21.45	21.55	21.95	21.95	21.95	21.95	21.95	22.20	24.33	30.35	35.95
1915.....	14.70	14.63	14.55	14.55	14.55	14.58	14.88	15.89	16.80	16.95	17.45	19.70
1914.....	15.00	15.09	15.15	14.90	14.90	14.90	14.90	14.90	14.90	14.85	14.70	14.70
1913.....	18.15	18.15	18.15	17.90	17.90	17.26	16.65	16.52	16.65	16.60	16.09	15.90
1912.....	15.15	15.00	15.02	15.15	15.15	15.15	15.15	15.43	15.93	17.75	18.05	18.15
1911.....	15.90	15.90	15.90	15.90	15.90	15.90	15.90	15.90	15.90	15.39	15.10	15.15
1910.....	19.90	19.42	18.90	18.15	17.09	16.73	16.40	16.21	15.90	15.90	15.90	15.90
1909.....	17.34	16.78	16.34	15.80	15.48	16.13	16.37	17.13	18.33	19.68	19.80	19.90
1908.....	19.00	17.90	17.86	17.49	16.92	16.90	16.73	16.11	15.90	15.48	16.74	17.40
1907.....	22.92	22.78	22.85	22.16	24.10	24.10	23.30	22.90	22.90	22.80	20.60	19.90
1906.....	17.32	17.29	17.26	17.25	17.24	17.38	17.57	17.96	18.44	20.06	21.96	22.75
1905.....	16.85	16.45	16.35	16.30	16.20	15.65	15.00	15.40	15.90	16.50	17.70	18.10
1904.....	13.60	13.35	13.85	14.10	13.60	12.60	12.50	12.65	12.75	13.35	15.25	16.60
1903.....	22.35	22.35	22.00	21.60	20.00	19.85	19.00	17.85	16.35	15.85	15.25	14.35
1902.....	16.70	16.93	17.56	18.37	20.95	21.25	22.00	21.75	21.75	21.95	22.25	22.12
1901.....	13.25	13.60	16.56	16.69	16.65	15.94	16.00	15.90	15.71	15.90	16.10	16.35
1900.....	24.90	24.90	24.90	24.90	24.90	19.75	18.00	16.05	14.00	13.25	13.65	13.55
1899.....	11.00	11.75	14.00	15.15	16.25	19.00	20.75	22.00	23.50	24.00	24.50	25.00
1898.....	9.90	10.15	10.40	10.50	10.50	10.40	10.35	10.40	10.40	10.30	10.20	10.65
1897.....	10.50	10.65	10.50	10.00	9.35	9.35	9.00	9.05	10.00	10.25	10.25	9.90
1896.....	12.30	12.80	12.00	13.15	12.75	12.40	12.20	11.45	11.25	11.50	12.30	11.40
1895.....	10.00	10.15	10.25	10.75	11.25	12.00	14.00	14.75	17.25	15.75	14.00	12.25

Market History—

Malleable, Valley, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$22.75	$22.25	$21.25	$20.10	$19.00	$18.50	$18.50	$18.50	$18.80	$19.35	$20.35	$20.50
1924.....	22.00	23.00	22.50	22.20	21.30	19.75	19.00	19.00	19.50	19.50	19.75	20.50
1923.....	27.25	27.25	29.20	31.00	30.20	28.25	25.50	24.70	24.60	23.25	20.40	22.00
1922.....	19.45	19.00	19.00	20.40	24.60	24.50	25.00	28.60	34.00	32.30	29.25	26.25
1921.....	32.25	28.75	26.40	24.90	23.75	22.60	20.40	20.00	20.40	20.20	20.00	20.00
1920.....	38.95	41.60	42.35	41.60	41.60	41.85	43.40	48.25	50.50	48.25	40.40	36.00
1919.....	31.50	31.50	30.45	27.25	27.25	27.25	27.25	27.25	27.25	27.75	31.75	36.40
1918.....	33.50	33.50	34.45	34.45	34.45	34.65	34.90	34.90	34.90	34.50	34.50	34.50
1917.....	31.00	33.50	36.00	39.00	42.70	50.10	53.00	54.00	49.60	34.25	33.50	33.50
1916.....	19.00	18.65	18.50	18.50	18.50	18.50	18.50	18.50	18.55	20.15	25.85	30.75
1915.....	12.75	12.75	12.85	12.50	12.50	12.50	12.65	13.75	14.50	14.60	15.50	17.90
1914.....	13.15	13.19	14.15	13.25	13.25	13.00	13.00	13.00	13.00	12.90	12.75	12.75
1913.....	17.25	17.20	16.75	15.75	14.85	14.40	14.15	14.00	14.05	14.25	13.85	13.50

No. 2 Foundry, Valley, 1904-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$22.25	$22.00	$21.25	$20.20	$18.85	$18.50	$18.50	$18.75	$19.20	$20.40	$00.00	$20.50
1924.....	22.40	23.00	22.50	21.75	20.90	19.50	19.00	19.25	19.50	19.50	19.60	20.50
1923.....	27.00	27.00	29.60	31.00	30.15	27.75	25.60	24.70	24.75	23.40	22.00	22.00
1922.....	20.05	19.20	19.20	20.55	23.95	24.20	24.20	31.00	35.25	31.85	28.40	25.00
1921.....	31.10	28.20	26.20	25.05	23.80	22.50	20.30	20.10	21.20	21.20	20.05	20.35
1920.....	40.50	42.40	43.40	44.20	45.40	45.40	46.40	49.65	50.95	48.95	42.95	37.20
1919.....	31.00	31.00	29.10	26.75	26.75	28.15	28.15	28.15	29.50	34.95	33.35	38.15
1918.....	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	34.00	34.00	34.00
1917.....	32.35	34.25	37.20	39.90	42.95	51.40	55.90	54.70	49.05	33.00	33.00	33.00
1916.....	18.90	18.75	18.75	18.90	18.70	18.50	18.50	18.50	18.65	20.75	26.10	31.30
1915.....	13.25	13.25	13.25	12.95	12.75	12.75	12.85	13.95	14.75	14.85	15.90	17.50
1914.....	12.89	13.25	13.40	13.50	13.50	13.50	13.50	13.30	13.25	13.10	12.90	13.05
1913.....	17.50	17.30	16.75	15.80	14.80	14.15	13.85	13.80	14.00	13.90	13.90	13.50
1912.....	13.00	13.10	13.20	13.35	13.30	13.30	13.50	13.85	14.50	16.15	17.30	17.50
1911.....	13.75	13.75	13.85	13.85	14.75	13.60	13.50	13.50	13.50	13.50	13.15	12.80
1910.....	17.00	16.55	16.10	15.75	15.35	14.65	14.20	14.10	14.40	13.95	13.75	13.75
1909.....	15.35	15.00	14.85	14.25	14.35	14.85	15.25	15.35	16.25	17.10	17.25	17.25
1908.....	16.35	16.00	15.70	15.10	14.50	15.35	15.10	15.00	14.60	14.20	15.50	15.50
1907.....	23.30	24.00	24.00	24.00	24.50	24.50	23.15	22.55	21.30	20.05	19.15	17.05
1906.....	17.55	17.25	17.15	16.75	16.65	16.25	16.50	18.00	19.00	20.50	23.00	23.75
1905.....	16.50	16.15	16.00	16.15	15.75	14.35	14.35	14.55	14.75	15.65	16.85	17.25
1904.....	12.50	12.25	13.00	12.90	12.15	11.65	11.50	11.65	11.75	12.40	15.00	16.00

No. 2 Foundry, Chicago, 1895-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$23.80	$24.00	$24.00	$22.60	$21.25	$20.25	$20.30	$20.50	$21.10	$21.60	$22.75	$23.00
1924.....	23.70	24.40	24.50	24.40	22.80	21.40	19.80	20.40	20.50	20.50	21.00	22.00
1923.....	28.80	29.75	31.25	32.50	32.50	31.25	28.00	27.10	26.75	25.60	23.30	23.00
1922.....	19.00	18.90	20.00	20.50	22.60	23.25	24.65	28.60	32.00	31.75	30.60	28.00
1921.....	32.75	28.65	25.80	24.25	23.00	21.10	19.15	19.60	21.75	21.50	21.00	20.00
1920.....	40.00	42.25	43.00	43.00	43.00	43.00	44.40	46.00	46.00	46.00	42.40	36.50
1919.....	31.00	31.00	29.95	26.75	26.75	26.75	26.75	26.75	26.75	31.75	31.75	38.30
1918.....	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	34.00	34.00	34.00
1917.....	30.00	31.25	35.70	39.25	43.20	51.00	55.00	55.00	49.50	33.00	33.00	33.00
1916.....	18.50	18.50	18.70	19.00	19.00	19.00	19.00	19.00	18.65	19.15	25.00	29.25
1915.....	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.40	13.80	14.45	17.10	18.00
1914.....	14.25	14.20	14.25	14.25	14.25	14.20	14.00	14.00	13.65	13.30	13.00	13.00
1913.....	18.00	18.00	17.60	17.25	16.70	16.10	15.20	15.00	15.00	15.00	15.00	14.50
1912.....	14.00	14.00	14.00	14.25	14.50	14.50	14.60	15.30	16.35	17.30	17.85	18.00
1911.....	15.00	15.00	15.00	15.00	15.00	15.00	15.00	14.50	14.50	14.50	14.00	14.00
1910.....	19.00	18.75	18.25	17.00	16.75	16.50	16.50	16.50	16.50	16.00	16.00	16.00
1909.....	17.45	16.75	16.50	16.45	16.20	16.40	16.90	17.35	18.20	18.85	19.00	19.00
1908.....	18.25	17.85	17.40	17.20	17.00	17.30	17.00	17.00	16.75	16.50	16.75	17.35
1907.....	26.00	26.50	26.75	27.50	27.40	26.50	25.40	24.50	23.60	22.60	20.60	19.00
1906.....	19.25	19.25	19.00	18.75	18.50	18.10	18.30	18.90	19.75	21.50	26.50	27.00
1905.....	17.50	17.50	17.50	17.50	17.25	16.60	16.15	16.35	16.50	17.55	18.90	19.50
1904.....	14.10	13.75	13.55	14.00	13.80	13.40	13.30	13.35	13.40	13.70	15.60	16.60
1903.....	25.00	24.00	24.00	23.00	21.70	20.50	18.50	17.50	16.85	15.90	14.50	14.30
1902.....	15.80	16.75	18.60	19.75	21.75	22.50	23.40	24.65	27.15	27.15	26.90	25.40
1901.....	14.60	14.10	15.20	15.50	15.50	15.50	15.50	15.20	15.00	15.00	15.00	15.50
1900.....	24.50	24.50	23.75	23.25	22.00	20.25	17.75	15.50	14.50	14.00	14.25	14.60
1899.....	11.25	12.00	14.25	15.00	15.25	17.00	17.00	20.00	22.00	23.00	23.50	24.50
1898.....	10.50	10.50	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
1897.....	11.00	10.75	10.75	10.75	10.25	10.00	10.00	10.00	10.25	10.75	10.75	10.50
1896.....	13.50	12.25	12.00	12.00	11.75	11.25	11.25	11.20	10.80	10.75	11.10	11.25
1895.....	9.75	9.75	9.75	10.00	10.25	10.75	12.50	13.50	13.50	14.50	14.50	14.00

Southern No. 2, Birmingham, 1904-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$20.10	$20.75	$21.00	$20.00	$20.00	$19.00	$18.00	$18.00	$18.50	$19.50	$21.00	$21.20
1924.....	21.60	23.00	23.00	22.20	21.60	20.00	18.20	17.90	17.65	17.50	17.90	19.50
1923.....	23.30	24.50	26.50	27.00	27.00	26.75	25.00	23.60	22.75	20.20	19.25	21.00
1922.....	16.15	19.25	15.25	16.00	17.60	18.50	18.50	20.70	26.25	27.40	24.00	22.50
1921.....	33.75	27.70	25.10	23.00	22.50	21.70	20.25	19.00	19.00	19.00	18.25	17.00
1920.....	38.20	40.00	40.00	40.00	42.00	42.30	42.30	42.00	42.00	42.00	39.50	38.00
1919.....	31.00	31.00	30.00	26.75	26.25	25.25	25.00	26.75	26.75	27.45	30.65	35.15
1918.....	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	35.25	35.25	35.25
1917.....	23.00	24.50	28.00	35.80	35.75	35.75	46.00	48.00	43.50	33.50	33.50	33.50
1916.....	14.50	14.65	15.00	15.00	15.00	14.45	14.00	13.60	14.40	15.15	19.60	23.00
1915.....	9.50	9.50	9.40	9.35	9.75	9.55	9.60	11.00	11.30	11.75	13.15	14.20
1914.....	10.50	10.50	10.60	10.50	10.50	10.45	10.05	10.00	10.00	10.00	9.90	9.50
1913.....	13.70	13.50	13.00	12.50	11.75	10.60	10.50	11.00	11.00	11.00	10.75	11.00
1912.....	10.00	10.00	10.05	10.50	10.95	11.00	11.25	11.65	12.50	13.45	13.75	13.50
1911.....	11.00	11.00	11.00	11.00	10.75	10.25	10.00	10.05	10.10	10.00	9.75	10.00
1910.....	14.00	13.90	13.00	12.10	11.80	11.60	11.40	11.00	11.00	11.00	11.00	11.00
1909.....	13.00	12.70	11.75	11.00	11.00	11.30	12.30	13.00	14.00	14.50	14.50	14.00
1908.....	12.80	12.50	12.10	11.90	11.50	12.00	11.60	12.05	12.50	12.50	12.50	13.00
1907.....	23.00	23.00	22.75	22.00	21.40	21.25	20.50	19.80	18.10	17.65	16.00	14.90
1906.....	14.00	14.00	13.70	13.65	13.75	13.50	13.00	14.15	16.00	17.15	21.25	22.00
1905.....	13.50	13.50	13.50	13.25	12.75	11.85	11.00	11.65	11.75	12.50	14.00	14.00
1904.....	9.75	9.50	9.70	10.00	9.65	9.15	9.15	9.50	9.50	10.65	12.75	13.05

Market History—

Malleable, Chicago, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$24.00	$24.00	$24.00	$22.70	$21.25	$20.25	$20.50	$20.50	$21.10	$21.60	$22.75	$23.00
1924.....	23.70	24.40	24 50	24.40	22.80	21.40	19.80	20.40	20.50	20.50	21.00	22.00
1923.....	28.80	29.75	31.25	32.50	32.50	31.25	28.00	27.10	26.75	25.60	23.30	23.00
1922.....	19.00	18.90	20.00	20.50	22.60	23.25	24.65	28.60	32.00	31.75	30.60	28.25
1921.....	33.25	29.00	26.25	24.75	23.50	21.20	19.15	19.40	21.75	21.20	21.00	20.00
1920.....	40.50	42.75	43.50	43.50	43.50	43.50	44.90	46.50	46.50	46.50	43.00	37.50
1919.....	31.50	31.50	30.45	27.25	27.25	27.25	27.25	27.25	27.25	28.00	32.25	38.80
1918.....	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	34.50	34.50	34.50
1917.....	30.00	31.25	35.80	39.00	43.20	50.50	55.00	55.00	49.50	33.35	33.50	33.50
1916.....	19.00	19.00	19.00	19.50	19.50	19.50	19.50	19.50	19.15	19.50	25.00	29.25
1915.....	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.40	14.20	15.10	17.40	18.00
1914.....	14.25	14.25	14.25	14.25	14.25	14.25	14.00	14.00	13.50	13.50	13.00	13.00
1913.....	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	14.40

No. 2X Foundry, Philadelphia, 1910-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$25.61	$25.26	$24.51	$23.16	$21.76	$21.51	$21.26	$21.76	$21.86	$22.61	$24.01	$24.69
1924.....	24.26	24.26	24.13	23.73	22.60	21.76	21.76	21.76	21.26	21.36	22.98	24.88
1923.....	29.56	30.10	32.00	32.75	32.75	30.60	28.00	25.80	26.20	24.50	23.00	24.26
1922.....	21.55	21.35	23.60	23.75	25.60	27.20	27.90	32.15	34.25	33.00	30.50	28.45
1921.....	35.00	31.00	27.40	26.25	26.10	26.00	23.50	21.00	21.40	22.00	22.50	22.10
1920.....	43.90	45.00	45.68	46.80	46.90	46.90	48.55	50.95	53.75	52.65	46.75	38.95
1919.....	36.15	36.15	35.10	31.00	30.10	29.60	29.50	29.60	29.95	32.00	35.85	40.75
1918.....	34.25	34.25	34.25	34.25	34.25	34.25	34.50	34.50	34.50	38.85	39.15	39.15
1917.....	30.50	31.75	36.50	41.75	43.35	47.50	54.35	53.40	47.80	34.00	34.00	34.00
1916.....	19.75	20.00	20.00	20.75	20.50	19.75	19.75	19.75	19.75	20.50	25.25	30.00
1915.....	14.25	14.25	14.25	14.25	14.00	14.25	14.50	15.25	16.25	16.50	17.50	19.25
1914.....	14.75	15.00	15.00	15.00	14.75	14.75	14.75	14.75	14.75	14.50	14.25	14.25
1913.....	18.25	18.00	17.75	17.50	17.00	16.25	15.50	15.75	16.00	15.75	15.50	15.00
1912.....	15.00	15.00	15.00	15.25	15.25	15.50	15.75	16.00	16.50	17.50	18.00	18.25
1911.....	15.50	15.50	15.75	15.50	15.25	15.00	15.00	15.00	15.00	15.00	14.85	14.75
1910.....	19.00	18.40	18.25	17.75	17.25	16.75	16.00	16.00	16.00	15.75	15.50	15.50

Basic, Eastern Pennsylvania, 1909-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$24.25	$24.20	$24.05	$22.65	$21.45	$21.50	$21.50	$20.55	$20.50	$20.50	$22.70	$22.75
1924.....	22 50	22.50	21.50	21.35	20.75	20.60	20.50	20.00	20.00	20.00	21.46	22.50
1923.....	27.70	28.15	29.35	30.75	30.75	28.15	27.25	25.10	25.10	24.00	22.60	23.30
1922.....	20.25	19.85	19.90	21.70	24.55	25.25	26.00	29.50	30.00	30.25	28.00	27.65
1921.....	33.35	29.95	26.20	25.00	25.00	24.70	22.25	20.70	19.50	20.50	20.90	20.25
1920.....	39.75	40.50	43.00	43.70	44.00	44.05	44.10	47.45	51.15	50.75	44.55	34.75
1919.....	33.90	33.90	32.85	29.65	28.80	25.50	26.60	27.00	27.00	27.90	33.00	35.75
1918.....	33.90	33.90	33.90	32.90	32.90	32.90	32.90	32.90	32.90	36.60	36.90	36.90
1917.....	30.15	30.50	33.80	38.25	40.80	46.40	50.75	51.00	46.50	33.50	33.50	33.50
1916.....	19.50	19.50	20.00	20.50	20.00	19.25	19.00	19.25	20.00	21.00	25.50	30.50
1915.....	13.50	13.75	14.00	13.25	13.50	13.50	13.75	15.25	17.25	17.50	17.75	18.00
1914.....	14.00	14.25	14.25	14.25	14.00	14.00	14.00	14.00	14.00	14.00	13.50	13.50
1913.....	18.25	18.00	17.50	16.50	16.50	16.00	15.25	15.00	15.25	15.25	15.00	14.25
1912.....	14.25	14.25	14.25	15.00	15.00	15.25	15.50	16.25	16.50	17.50	18.00	18.25
1911.....	14.50	15.00	15.25	15.25	14.75	14.50	14.50	14.50	14.50	14.50	14.25	14.25
1910.....	18.75	18.50	18.00	17.50	16.25	15.75	15.50	15.00	15.00	14.50	14.50	14.50
1909.....	16.40	16.10	15.85	15.05	15.00	15.85	15.90	16.15	16.80	17.85	18.36	18.15

Southern Ohio No. 2, Ironton, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$22.00	$22.00	$21.60	$21.00	$19.50	$18.75	$19.00	$19.35	$19.50	$19.60	$21.00	$21.00
1924.....	22.90	24.00	23.50	23.00	22.50	20.25	19.50	19.75	20.00	20.00	20.90	22.00
1923.....	27.50	28.40	30.75	31.00	31.00	28.25	26.50	26.00	24.90	23.90	22.50	22.50
1922.....	19.60	19.15	19.00	20.30	22.70	23.25	24.15	27.00	33.75	32.40	29.25	27.00
1921.....	34.60	30.00	27.50	25.85	24.50	22.80	20.50	20.15	20.30	21.00	20.50	20.00
1920.....	39.50	43.00	43.25	43.25	44.00	44.00	44.00	46.50	46.80	46.00	44.00	37.25
1919.....	31.00	31.00	29.95	26.75	26.75	26.75	26.75	26.75	26.75	28.80	31.75	36.55
1918.....	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	34.00	34.00	34.00
1917.....	30.00	30.75	35.80	37.75	41.20	47.50	54.50	55.00	49.25	33.00	33.00	33.00
1916.....	18.30	18.50	18.30	18.50	18.50	18.15	18.45	18.40	18.15	19.40	24.00	30.00
1915.....	12.75	12.75	12.75	12.75	12.56	12.50	12.60	13.65	14.20	14.90	16.15	17.00
1914.....	13.00	13.00	13.25	13.50	13.50	13.50	13.00	13.50	13.00	13.00	12.65	12.65
1913.....	17.90	17.50	17.20	16.85	16.20	15.90	15.40	15.20	15.20	14.75	14.70	13.50

Lake Superior Charcoal, Chicago, 1907-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04	$29.04
1924.....	29 04	29 04	29 04	29 04	29.04	29.04	29 04	29.04	29.04	29.04	29.04	29 04
1923.....	33.15	33.53	35.53	36.55	36.55	36.65	36.62	32.10	32.04	30.04	28.65	29.04
1922.....	31.50	30.50	26.90	26.50	28.40	30.00	31.65	33.75	36.15	36.15	36.15	36.15
1921.....	40.25	38.50	38.50	38.50	38.50	38.50	36.87	34.30	33.25	32.50	32.25	31.50
1920.....	48.75	55.65	57.50	57.50	57.50	57.50	57.50	57.50	58.30	58.50	58.50	53.50
1919.....	38.70	38.70	38.70	33.25	31.75	31.75	31.75	32.75	32.75	33.15	35.50	41.00
1918.....	37.50	37.50	37.50	37.50	37.50	37.50	37.70	37.70	37.70	37.70	38.70	38.70
1917.....	33.75	34.50	37.55	42.25	49.25	51.80	59.50	59.50	59.50	48.50	37.50	37.50
1916.....	19.25	19.50	19.75	19.75	19.75	19.75	19.75	19.75	19.75	20.35	21.95	31.75
1915.....	15.75	15.75	15.75	15.75	15.25	15.25	15.75	15.75	15.95	16.25	17.50	19.25
1914.....	15.50	15.50	15.50	15.50	15.75	15.75	15.75	15.75	15.75	15.75	15.75	15.75
1913.....	18.25	18.00	18.00	18.00	18.00	16.75	16.75	15.00	15.00	15.75	15.50	15.50
1912.....	16.50	16.50	16.50	15.50	15.75	15.75	16.25	16.75	17.75	18.75	18.75	18.75
1911.....	17.50	17.50	17.50	17.50	17.00	17.00	17.00	17.00	17.00	17.00	16.50	16.50
1910.....	19.50	19.50	19.00	19.00	19.00	18.50	18.50	18.50	18.50	18.00	18.00	17.50
1909.....	19.50	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70
1908.....	22.80	31.50	21.50	21.10	19.85	19.50	19.50	19.50	19.50	19.50	19.50	19.50
1907.....	25.50	26.75	25.50	26.00	27.10	27.40	27.10	27.00	26.75	26.10	25.25	23.50

Market History—

Standard Low Phosphorus, Del. Eastern Pennsylvania, 1911-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$26.76	$26.76	$26.76	$26.26	$25.26	$25.26	$25.26	$25.26	$24.01	$24.51	$24.76	$24.76
1924.....	27.76	27.76	26.76	26.86	27.26	27.26	27.26	26.26	26.26	26.26	26.76	29.79
1923.....	29.75	31.35	35.45	35.45	35.80	34.80	33.80	32.80	30.50	30.50	30.00	29.76
1922.....	35.00	34.00	34.00	34.00	35.35	35.35	35.15	38.00	40.00	40.00	40.00	40.00
1921.....	47.70	46.80	46.80	44.15	43.30	43.30	43.30	43.30	43.30	43.30	43.30	35.30
1920.....	51.60	53.55	53.80	53.80	54.80	60.20	57.80	59.60	65.30	65.30	*65.30	*65.30
1919.....	51.00	51.00	49.90	46.75	45.80	42.25	41.10	40.25	40.25	40.35	43.00	47.50
1918.....	55.50	55.50	55.50	55.50	55.50	55.50	56.00	56.00	56.00	57.00	57.00	57.00
1917.....	54.50	57.50	66.70	75.50	77.00	85.00	92.50	92.50	82.00	55.50	55.50	55.50
1916.....	32.00	32.00	32.00	33.00	34.00	34.00	33.00	33.00	34.00	40.00	46.00	55.00
1915.....	19.00	19.00	20.00	20.00	20.00	20.50	21.50	23.50	24.50	28.00	30.00	32.00
1914.....	21.00	21.00	21.00	21.00	21.00	20.50	20.50	21.00	21.00	21.00	19.00	19.00
1913.....	24.50	24.50	24.00	23.50	23.50	23.50	23.50	23.00	23.00	23.00	21.50	21.00
1912.....	19.25	19.00	19.00	19.50	19.75	19.75	20.00	21.00	21.50	22.50	24.00	24.50
1911.....	21.50	21.00	21.00	21.00	21.00	20.50	20.50	20.50	20.50	20.25	19.50	19.25

* Nominal.

No. 2X Foundry, Buffalo, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$23.50	$22.75	$22.50	$20.90	$19.25	$19.00	$19.00	$19.00	$19.00	$19.50	$21.25	$21.50
1924.....	23.10	22.75	22.00	21.50	20.50	19.90	19.30	$9.10	19.50	19.60	20.90	22.00
1923.....	28.00	28.50	29.40	30.10	29.80	29.50	26.60	25.50	25.25	23 00	20.70	22.00
1922.....	19.80	19.15	18.30	20.75	23.00	23.85	25.35	31.50	33.75	31.50	27.85	26.00
1921.....	33.75	31.25	28.25	26.75	26.25	23.85	21.75	21.25	21.05	20.40	20.00	20.00
1920.....	41.50	44.60	45.15	46.25	46.25	46.25	46.25	48.75	51.25	51.25	46.00	48.25
1919.....	32.25	32.25	31.45	28.00	28.00	28.00	28.00	28.70	28.75	29.90	34 45	39.50
1918.....	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	35.25	35.25	35.25
1917.....	35.00	35.00	38.15	40.00	42.75	49.15	53.50	54.00	49.05	33.50	33.50	33.50
1916.....	18.50	18.60	18.85	19.15	19.00	18.75	18.75	18.75	18.90	20.70	26.65	33.65
1915.....	13.15	13.05	12.55	12.75	12.75	12.75	12.80	13.70	15.15	15.80	16.70	18.00
1914.....	13.00	13.00	13.75	13.90	13.50	13.05	13.05	13.20	13.25	12.60	12.45	13.10
1913.....	17.25	17.00	17.00	16.50	15.50	14.75	14.00	14.09	14.25	14.00	14.00	14.00

No. 2X Virginia Furnace, 1911-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$24.50	$24.50	$24.50	$23.90	$23.35	$23.00	$23.00	$23.00	$23.00	$23.00	$23.00	$23.80
1924.....	25.00	25.75	26.00	25.50	25.50	25.50	24.50	24.50	24.50	24.50	24.50	25.00
1923.....	27.50	27.50	28.25	29.25	28.60	28.00	27.25	26.25	25.50	25.00	25.00	24.50
1922.....	21.75	22.00	22.50	22.85	23.50	24.50	26.00	26.00	33.00	33.00	31.40	27.75
1921.....	34.50	31.25	28.05	27.10	27.00	26.00	24.50	24.00	23.00	23.25	22.80	22.50
1920.....	41.25	42.75	43.25	44.25	45.75	46.25	46.75	49.25	50.25	49.25	45.75	42.05
1919.....	35.25	33.00	31.55	28.45	27.50	26.50	26.50	28.25	29.25	30.35	33.40	38.25
1918.....	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	37.50	38.00	38.00
1917.....	26.50	28.25	34.25	38.30	41.00	46.50	52.25	51.90	46.50	33.50	33.50	33.50
1916.....	17.25	18.00	18.25	18.50	18.50	18.50	18.50	18.50	17.50	18.50	23.75	27.00
1915.....	12.50	12.50	12.50	12.50	12.50	12.50	12.50	13.00	13.50	14.00	15.50	17.00
1914.....	12.75	12.75	12.75	12.75	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
1913.....	16.00	15.50	15.50	15.00	14.50	13.75	13.00	13.00	13.00	13.00	13.00	12.75
1912.....	12.25	12.25	12.25	13.00	13.00	13.25	13.50	14 00	14.50	15.50	16.00	16.00
1911.....	12.75	12 75	13.00	13.00	13.00	12.25	12.25	12.25	12.25	12 25	12 25	12.25

Semifinished Material

Per Gross Ton

Bessemer Billets, Pittsburgh, 1895-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$37.40	$37.60	$37.75	$35.80	$35.35	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00
1924.....	40.00	40.00	40.00	40.00	39.20	38.00	38.00	38.00	37.10	36.60	35.50	35.50
1923.....	37.50	38.85	44.50	46.00	45.00	42.50	42.50	42.50	42.50	41.50	41.50	40.00
1922.....	29.00	28.00	28.30	30.10	34.50	35.00	35.00	35.00	39.50	40.00	38.80	36.50
1921.....	43.50	41.00	38.50	37.75	37.00	37.00	32.25	30.00	29.80	30.00	29.00	29.00
1920.....	49.60	61.25	65.00	68.00	70.00	66.25	65.00	61.25	60.00	58.75	52.50	46.25
1919.....	43.50	43.50	42.25	38.50	38.50	38.00	37.30	38.00	38 50	39.30	40 85	45.00
1918.....	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
1917.....	62.50	64.85	69.30	75.20	88.65	95.60	102.25	92.25	74.05	58.75	47.50	47.50
1916.....	34.05	35.50	41.10	46.25	46.10	43.00	42.50	45.15	47.50	48.10	53.10	59.50
1915.....	19.75	20.00	20.00	20.00	20.05	20.35	21.45	23.00	24.70	25 20	27.10	30.75
1914.....	20.00	20.90	21.05	21.05	20.00	19.80	19.55	20.05	21.00	20.40	19.25	18.85
1913.....	28.90	28.90	29.00	29.00	27.80	26.75	26.75	26.30	25.00	23.00	21.10	20.10
1912.....	20.00	20.00	19.90	20.00	21.10	21.90	22.25	22.40	23.75	25.70	26.75	27.00
1911.....	23.00	23.00	23.00	23.00	23.00	21.00	21.00	21.00	21.00	20.00	19.70	19.25
1910.....	27.87	27.50	27.50	27.00	26.10	25.50	25.00	25.00	24.50	23.40	23.00	23.00
1909.....	25.00	23.50	23.00	22.00	22.50	23.00	24.00	25.00	26.00	26.50	27.50	27.50
1908.....	28.00	28.00	28.00	28.00	28.00	26.50	25.00	25.00	25.00	25.00	25.00	25.00
1907.....	29.75	29.50	29.25	29.75	30.25	31.00	30.00	30.00	29.50	28.50	28.00	28.00
1906.....	27.00	27.50	27.65	27.75	27.00	26.25	27.00	28.00	28.50	28.50	29.00	29.75
1905.....	21.00	24.90	24.60	25.50	23.50	22.00	22.00	23.50	25.75	25.95	26.30	26.50
1904.....	23.00	23.00	23.00	23.00	22.00	21.50	21.00	20.00	19.50	19.50	21.00	21.00
1903.....	29.75	30.00	30.25	31.00	30.50	29.50	27.50	27.00	27.00	26.50	23.50	23.00
1902.....	28.05	29.80	31.35	32.25	33.90	35.20	33.50	32.10	31.50	29.80	29.00	29.25
1901.....	19.70	19.75	20.80	24.10	24.20	24.45	24.25	24.40	24.10	26.80	28.25	27.60
1900.....	35.00	35.00	35.00	34.50	29.00	27.25	22.50	18.00	17.50	17.50	19.30	19.75
1899.....	16.75	18.25	24.00	25.50	27.00	31.50	33.50	36.50	39.00	37.50	36.00	35.00
1898.....	15.00	15.00	15.25	15.25	14.85	14.75	14.75	15.45	16.10	15.75	15.25	16.00
1897.....	15.25	15.50	15.50	14.75	14.00	14.25	14.00	14.15	15.75	16.50	15.75	15.00
1896.....	17.05	17.65	17.50	18.90	19.50	19.75	19.90	19.75	19.60	20.25	20.00	17.00
1895.....	14.85	15.00	14.85	15.40	16.75	18.75	20.85	22.00	24.25	22.00	19.50	17.00

Market History—

Open-hearth Billets, Pittsburgh, 1910-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$37.75	$37.65	$37.75	$35.80	$35.40	$33.90	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00
1924.....	40.00	40.00	40.00	40.00	39.20	38.00	38.00	38.00	37.10	36.60	35.50	35.50
1923.....	37.50	38.85	44.50	46.00	45.00	42.90	42.50	42.50	42.50	41.50	41.50	40.00
1922.....	29.00	28.00	28.30	30.10	34.50	35.00	35.00	35.00	39.50	40.00	38.80	36.50
1921.....	43.50	41.00	38.50	37.75	37.00	37.00	32.25	30.00	29.80	30.00	29.00	29.00
1920.....	49.60	61.25	66.25	70.00	70.00	66.25	65.00	61.25	60.00	58.75	52.50	46.25
1919.....	43.50	43.50	42.25	38.50	38.50	38.00	37.30	38.00	38.50	39.30	40.85	45.00
1918.....	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
1917.....	60.00	62.50	67.00	72.50	85.00	93.75	100.00	93.00	73.75	58.75	47.50	47.50
1916.....	34.75	35.00	40.60	45.00	44.25	41.20	40.00	43.60	45.00	45.75	52.00	58.75
1915.....	19.50	19.50	19.50	19.50	19.50	19.85	21.50	24.00	25.60	26.50	28.00	30.20
1914.....	20.00	20.75	21.00	20.80	20.00	19.75	19.30	20.00	21.00	20.60	19.00	18.50
1913.....	28.70	29.40	29.50	29.50	28.10	26.50	26.50	26.10	25.00	23.00	20.85	20.00
1912.....	19.75	19.50	19.40	20.25	21.00	21.25	21.75	21.75	21.75	21.75	21.75	28.00
1911.....	23.00	23.00	23.00	22.00	21.00	21.00	21.00	21.00	20.25	19.50	19.75	19.25
1910.....	28.00	28.00	28.50	28.75	28.75	27.00	26.50	26.00	25.00	24.00	23.25	23.00

Wire Rods, Pittsburgh, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$48.00	$48.00	$48.00	$47.75	$46.00	$45.25	$45.00	$45.00	$45.00	$45.00	$45.00	$45.30
1924.....	51.00	51.00	51.00	51.00	48.40	48.00	48.00	46.00	45.75	45.00	45.50	48 00
1923.....	45.00	47.50	47.00	46.60	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00
1922.....	37.00	35.75	35.80	38.00	38.00	38.00	39.50	40.00	45.00	45.00	46.50	46.50
1921.....	57.00	57.00	52.00	50.00	48.00	47.00	42.25	42.00	40.80	40.00	38.00	38.00
1920.....	52.00	56.00	62.50	70.00	70.00	70.00	70.00	70.00	70.00	75.00	72.50	57.00
1919.....	57.00	57.00	55.75	52.00	52.00	52.00	52.00	52.00	52.00	52.00	56.00	62.00
1918.....	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.25	57.50	57.50	57.50
1917.....	73.75	75.00	75.00	83.75	88.00	92.50	95.00	96.00	90.00	73.50	57.00	57.00
1916.....	46.25	50.00	51.00	55.00	60.00	60.00	58.75	55.00	55.00	55.00	64.00	69.00
1915.....	25.00	25.00	25.00	25.00	25.00	25.00	25.60	26.75	28.50	30.00	34.50	39.00
1914.....	25.50	25.90	26.00	26.00	26.00	25.50	24.80	24.50	25.60	26.00	25.75	25.00
1913.....	30.00	30.00	30.00	30.00	30.00	29.50	28.60	27.60	27.50	26.80	26.00	25.75

Open-hearth Sheet Bars, Pittsburgh, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$39.25	$39.00	$38.25	$37.00	$36.25	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$36.80
1924.....	42.50	42.50	42.50	42.10	40.60	40.00	39.20	38.00	37.50	37.20	37.00	37 00
1923.....	37.50	39.25	44.50	45.85	45.40	42.90	42.50	42.50	42.50	42.50	42.50	42.50
1922.....	30.00	29.00	29.40	31.50	35.00	35.00	35.00	35.00	39.50	39.85	38.80	36.50
1921.....	47.00	43.00	39.60	38.75	39.00	37.40	34.00	32.00	30.40	31.50	30.00	29.25
1920.....	53.40	65.00	72.50	78.00	78.75	75.00	75.00	71.25	68.50	63.75	56.25	47.65
1919.....	47.00	47.00	45.75	42.00	42.00	41.50	40.80	42.00	42.00	42.00	45.00	48.00
1918.....	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00
1917.....	60.00	62.50	67.50	72.00	88.00	101.25	105.00	96.00	82.50	65.50	57.00	51.00
1916.....	34.75	35.00	41.00	45.00	44.25	41.20	40.00	43.60	45.00	45.75	52.00	59.00
1915.....	20.00	20.00	20.00	19.60	20.00	20.35	22.00	25.00	25.80	26.50	28.50	30.80
1914.....	20.60	21.75	22.00	21.60	21.00	20.75	20.20	21.00	22.00	21.60	19.60	19.00
1913.....	29.20	29.90	30.00	30.00	28.80	27.50	27.50	27.10	25.60	23.80	21.75	21.00

Bessemer Sheet Bars, Pittsburgh, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$39.20	$39.00	$38.50	$37.00	$36.25	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$36.80
1924.....	42.50	42.50	42.50	42.10	40.60	40.00	39.20	38.00	37.50	37.20	37.00	37 00
1923.....	37.50	39.25	44.50	45.85	45.40	42.90	42.50	42.50	42.50	42.50	42.50	42.50
1922.....	30.00	29.00	29.40	31.50	35.00	35.00	35.00	35.00	39.50	39.85	38.80	36.50
1921.....	47.00	43.00	39.60	38.75	39.00	37.40	34.00	32.00	30.40	31.50	30.00	29.25
1920.....	53.40	65.00	70.00	70.00	75.00	70.00	70.00	70.00	68.50	63.75	56.25	47.65
1919.....	47.00	47.00	45.75	42.00	42.00	41.50	40.80	42.00	42.00	42.00	45.00	48.00
1918.....	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00
1917.....	60.00	62.50	67.50	72.00	88.00	101.25	105.00	96.00	82.50	65.50	57.00	57.00
1916.....	33.75	34.00	41.00	45.00	44.25	41.20	40.00	43.60	45.00	45.75	52.00	59.00
1915.....	20.00	20.00	20.00	19.60	20.00	20.35	22.00	25.00	25.80	26.50	28.50	30.80
1914.....	21.00	22.00	22.00	21.60	21.00	20.75	20.20	21.00	22.00	21.60	19.60	19.00
1913.....	28.70	29.40	29.50	29.50	28.40	27.50	27.50	27.10	25.60	23.80	21.75	21.00

Beehive Coke

Per Net Ton

Furnace Spot, Connellsville, 1914-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$4.10	$3.65	$3.35	$3.10	$3.10	$2.80	$2.80	$3.10	$3.45	$5.65	$6.35	$3.90
1924.....	3.80	4.00	4.05	3.55	3.25	3.15	2.85	3.00	3.00	3.00	3.00	3.35
1923.....	8.25	7.20	7.15	6.25	5.10	4.65	4.35	4.45	4.55	3.85	3.80	4.20
1922.....	2.75	2.95	3.25	4.30	6.00	6.60	10.65	13.20	11.00	10.60	7.10	6.25
1921.....	5.15	4.85	4.55	3.60	3.25	3.15	2.75	2.85	3.15	3.25	3.15	2.95
1920.....	6.00	6.00	6.00	11.20	12.00	14.50	15.20	17.75	16.90	15.15	8.40	6.25
1919.....	5.85	4.40	4.30	4.05	3.95	4.10	4.25	4.60	4.95	4.35	5.75	6.20
1918.....	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1917.....	9.05	11.20	9.40	7.60	8.35	11.40	12.10	13.70	12.10	6.00	6.00	6.00
1916.....	2.50	3.00	3.00	2.25	2.25	2.55	2.70	2.75	2.95	5.30	7.05	8.25
1915.....	1.60	1.55	1.50	1.50	1.55	1.55	1.70	1.50	1.60	1.70	2.10	2.10
1914.....	1.80	1.80	1.95	1.90	1.75	1.75	1.75	1.75	1.65	1.65	1.60	1.60

Market History—

Foundry Spot, Connellsville, 1900-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$5.10	$4.30	$3.85	$3.85	$3.70	$3.75	$3.75	$3.80	$4.20	$5.95	$6.85	$5.30
1924.....	4.35	4.80	4.85	4.60	4.30	4.15	4 05	4 00	4.00	4 00	4.05	4.25
1923.....	9.00	8.60	8.15	7.80	6.10	5.50	5.15	5.20	5.70	4.80	4.85	5.15
1922.....	3.85	3.80	4.05	4.95	6.50	7.20	11.40	14.30	12.75	12.10	8.40	7.50
1921.....	6.50	6.30	6.05	5.00	4.85	4.50	4.45	4.00	4.30	4.50	4.30	4.15
1920.....	7.00	7.00	7.00	11.60	12.50	15.00	16.00	18.25	17.90	16.85	9.40	7.25
1919.....	7.05	5.15	4.80	4.55	4.35	4.70	4.80	5.20	5.90	5.60	6.95	7.15
1918.....	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1917.....	10.40	10.90	11.30	9.65	9.65	11.20	15.00	12.70	13.35	7.00	7.00	7.00
1916.....	3.75	3.75	3.60	3.85	3.10	3.00	3.00	3.05	3.25	4.35	8.60	9.25
1915.....	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.05	2.25	2.30	2.95	3.15
1914.....	2.50	2.40	2.40	2.40	2.40	2.35	2.30	2.25	2.25	2.20	2.10	2.00
1913.....	4.45	3.70	3.50	3.05	2.90	2.85	2.85	2.85	2.85	2.75	2.50	2.50
1912.....	2.05	2.20	2.65	2.75	2.60	2.55	2.45	2.60	2.65	3.35	4.40	4.50
1911.....	1.95	1.95	2.00	2.00	1.90	1.75	1.80	1.85	1.85	1.85	1.90	1.90
1910.....	3.00	2.90	2.80	2.55	2.30	2.15	2.10	2.15	2.10	2.05	2.00	2.00
1909.....	1.70	1.60	1.55	1.50	1.45	1.50	1.50	1.65	2.30	2.75	2.80	2.75
1908.....	1.80	1.75	1.70	1.65	1.65	1.65	1.65	1.65	1.65	1.70	1.75	1.80
1907.....	3.75	3.55	3.00	2.70	2.15	2.05	2.40	2.60	2.80	2.90	2.40	2.00
1906.....	3.00	2.40	2.35	2.60	2.55	2.40	2.55	2.70	2.75	2.85	3.20	3.60
1905.....	2.80	2.50	2.50	2.00	1.90	1.85	1.80	1.85	2.00	2.70	3.00	2.85
1904.....	1.45	1.50	1.55	1.50	1.45	1.40	1.40	1.40	1.40	1.45	1.85	2.15
1903.....	4.50	4.50	4.00	3.75	3.50	3.00	2.50	2.00	2.00	1.90	1.90	1.75
1902.....	2.25	2.25	2.50	2.50	2.50	2.50	2.50	3.25	4.00	5.00	5.00	5.00
1901.....	1.75	1.75	2.00	2.00	2.00	1.85	1.75	1.75	1.75	2.00	2.00	2.00
1900.....	3.00	3.50	4.00	3.75	3.00	2.50	2.00	1.75	1.75	1.75	1.75	1.75

Iron and Steel Scrap

Per Gross Ton

Heavy Melting Steel, Pittsburgh, 1902-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$22.10	$19.00	$18.25	$17.00	$16.60	$17.10	$17.20	$19.25	$19.00	$18.40	$19.50	$19.00
1924.....	21.10	21.60	19.75	16.60	15 40	16.25	17.30	17.75	18.60	18.20	19.85	21.00
1923.....	21.65	23.40	26.10	25.85	22.50	20.50	18.25	17.50	18.00	16.10	15.70	18.50
1922.....	14.50	14.70	14.95	16.50	17.00	16.85	16.50	17.10	19.50	21.35	20.30	20.00
1921.....	15.00	15.00	15.00	13.00	13.60	13.10	12.00	12.60	11.30	14.00	14.25	14.25
1920.....	26.50	28.15	28.00	26.40	25.50	25.30	25.70	27.75	28.60	28.00	24.00	18.75
1919.....	20.80	17.00	14.60	15.75	15.55	17.25	19.90	21.25	20.50	20.00	21.90	24.65
1918.....	30.00	30.00	30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00
1917.....	23.25	21.90	23.40	28.15	28.40	40.00	40.25	36.60	35.50	31.30	29.60	30.00
1916.....	17.50	17.35	17.95	18.10	17.10	16.25	16.25	16.00	16.10	17.80	20.55	26.75
1915.....	11.55	11.60	12.00	11.90	11.75	11.75	11.75	13.38	14.25	14.00	15.30	17.40
1914.....	11.30	12.15	12.40	12.25	12.00	12.00	12.00	11.65	11.65	11.40	10.40	10.45
1913.....	15.15	14.90	14.40	14.40	14.15	13.50	12.75	12.65	12.65	12.65	11.75	11.20
1912.....	12.50	12.65	12.40	13.00	13.40	13.40	13.65	13.55	13.90	14.40	15.30	15.00
1911.....	13.50	14.30	14.40	13.50	12.75	13.15	12.90	13.40	13.15	12.25	12.15	12.50
1910.....	17.90	17.65	17.00	17.00	16.00	15.25	14.50	14.25	14.25	14.40	14.15	13.75
1909.....	16.50	16.00	14.75	14.15	14.95	15.50	15.75	16.00	16.75	17.90	18.15	17.95
1908.....	13.25	13.25	13.50	12.75	12.75	13.00	13.25	14.75	14.75	14.50	14.75	16.25
1907.....	19.25	18.75	18.25	18.25	18.15	18.65	18.50	18.25	17.75	17.50	15.45	13.75
1906.....	17.75	16.65	15.90	14.65	15.25	15.00	15.75	16.00	16.90	16.75	17.25	19.75
1905.....	16.75	16.15	16.50	16.50	15.40	14.50	14.25	14.15	15.40	16.20	17.15	18.25
1904.....	12.65	13.25	13.75	14.15	13.05	11.50	10.75	11.15	11.75	12.00	13.65	14.90
1903.....	22.25	21.75	21.25	22.15	21.65	20.50	20.25	18.75	18.25	16.00	14.50	11.50
1902.....	17.25	17.45	18.55	19.40	20.25	21.40	22.25	21.25	21.25	21.65	21.15	22.25

Heavy Melting Steel, Chicago, 1909-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$19.45	$17.55	$16.70	$15.00	$14.90	$15.90	$15.35	$16.05	$16.45	$16.25	$16.40	$15.80
1924.....	17.40	18.00	16.70	14.65	13.75	13.55	14.75	15.40	16.40	16.25	17.05	18.50
1923.....	18.70	19.75	23.15	22.40	19.75	17.75	17.10	16.25	16.55	14.50	13.80	16.00
1922.....	11.20	11.15	12.05	13.55	14.65	14.45	15.15	15.85	18.15	18.50	17.40	16.75
1921.....	15.25	15.25	12.55	11.25	11.50	11.20	10.55	10.70	11.30	12.55	12.40	11.00
1920.....	24.25	25.05	24.20	23.95	23.15	22.40	23.70	24.15	24.20	21.40	18.50	16.75
1919.....	19.20	14.90	15.25	16.40	15.40	16.75	19.40	20.75	19.00	18.80	20.65	21.25
1918.....	29.70	30.00	30.00	28.65	28.90	29.00	29.00	29.00	29.00	29.00	29.00	26.50
1917.....	20.25	21.65	23.00	26.65	28.70	37.00	35.50	33.10	32.65	27.00	28.50	28.90
1916.....	15.50	15.25	16.20	16.75	16.50	15.35	14.15	14.90	15.50	16.50	19.35	23.35
1915.....	8.90	9.45	9.75	9.30	9.25	9.40	10.15	11.50	12.00	11.55	13.15	15.40
1914.....	9.20	10.00	9.80	9.50	9.95	9.75	9.50	9.50	9.40	9.00	8.25	8.25
1913.....	12.75	12.50	12.50	12.50	12.00	12.00	12.00	12.00	12.00	12.00	9.00	9.00
1912.....	11.00	10.75	11.25	12.25	12.25	12.25	11.75	12.50	13.00	14.00	13.75	13.75
1911.....	11.50	12.00	12.00	11.50	10.25	10.25	10.25	10.75	10.50	10.00	9.75	9.75
1910.....	16.00	15.50	14.50	14.50	13.00	13.00	12.50	12.25	12.25	12.25	12.00	12.00
1909.....	14.00	13.40	12.15	12.90	13.50	14.15	14.05	14.95	15.80	16.30	15.75	15.50

Market History—

Heavy Melting Steel, Eastern Pennsylvania, 1909-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$20.00	$17.85	$16.25	$15.50	$15.00	$15.65	$16.00	$16.75	$17.25	$17.00	$17.60	$17.70
1924.....	18.05	18.95	17.00	15.25	14.20	15.00	15.00	16.50	15.90	16.50	18.05	19.00
1923.....	19.70	21.20	24.85	23.50	20.40	18.65	17.25	16.00	16.85	15.50	15.50	17.00
1922.....	11.75	12.25	13.15	14.35	15.15	15.30	15.00	15.25	17.10	18.00	16.70	16.00
1921.....	15.00	14.50	13.40	11.75	11.80	11.85	11.25	11.75	11.75	12.25	12.60	12.00
1920.....	24.25	25.75	25.55	24.30	23.60	22.40	22.00	24.10	26.40	23.80	20.30	16.90
1919.....	19.00	15.25	14.25	15.85	15.30	16.15	18.85	19.60	19.00	19.55	20.80	23.90
1918.....	29.80	30.00	29.50	28.30	28.50	28.50	28.50	28.50	28.50	28.50	28.00	25.00
1917.....	21.75	20.25	23.50	25.00	26.00	32.60	37.00	32.80	30.75	26.00	26.80	28.00
1916.....	15.50	14.95	16.15	16.80	16.35	15.35	13.95	15.40	16.65	17.50	21.25	26.00
1915.....	10.00	10.50	11.00	11.25	11.50	11.50	12.00	13.50	14.50	15.00	14.50	16.00
1914.....	10.50	11.25	11.50	11.00	10.75	10.75	10.50	10.75	10.75	9.75	9.50	9.50
1913.....	14.50	13.50	13.50	13.75	12.50	12.00	11.50	11.75	12.00	11.00	10.25	10.00
1912.....	12.25	12.00	12.25	13.00	13.75	13.50	13.75	14.25	14.75	15.50	15.25	15.00
1911.....	12.75	14.25	14.25	13.75	13.25	13.00	13.00	13.25	12.75	12.00	12.25	12.50
1910.....	17.00	16.50	16.50	15.50	14.50	14.50	14.00	13.75	14.00	13.50	12.75	12.50
1909.....	17.00	15.50	13.75	13.50	14.50	15.50	16.00	17.00	17.50	18.00	18.00	17.25

Cast Borings, Pittsburgh, 1902-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$17.20	$15.60	$14.50	$13.60	$12.85	$13.40	$13.50	$14.50	$14.85	$14.10	$15.10	$ 14.80
1924.....	16.50	16.60	15.35	13.65	12.00	13.85	13.75	14.20	14.75	15.20	16.25	17.00
1923.....	18.50	19.75	21.80	21.10	21.60	17.50	15.50	15.00	16.00	13.40	12.40	14.00
1922.....	10.40	11.25	11.85	13.00	14.15	14.80	15.75	15.75	17.30	18.15	17.75	17.50
1921.....	12.50	12.35	11.60	9.70	9.50	9.00	7.60	8.00	9.05	11.60	10.65	9.55
1920.....	19.35	21.70	20.35	19.85	19.25	18.35	18.25	19.55	20.50	19.35	17.00	14.50
1919.....	14.00	11.80	10.95	12.60	11.30	11.65	13.90	16.10	15.75	15.75	17.95	18.35
1918.....	20.00	20.00	20.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	18.00
1917.....	12.35	12.25	13.20	14.70	15.45	21.10	23.90	22.00	23.55	20.70	20.00	20.00
1916.....	11.35	11.40	11.40	11.30	10.30	9.90	8.65	8.00	8.50	9.15	9.85	13.35
1915.....	8.25	8.15	8.40	8.40	8.40	8.65	8.65	9.00	9.25	9.75	10.00	10.20
1914.....	7.90	8.40	9.25	8.40	8.40	7.90	8.15	8.50	8.50	8.25	8.25	8.25
1913.....	10.40	10.40	10.40	10.40	10.40	9.25	8.40	8.15	8.15	8.40	7.75	7.45
1912.....	9.65	9.40	9.15	9.65	10.15	10.15	10.25	10.15	9.90	9.90	10.50	10.40
1911.....	8.65	8.65	9.50	8.75	8.50	8.90	8.90	9.25	9.40	8.50	8.25	8.35
1910.....	11.00	10.75	9.75	9.75	9.25	8.75	8.00	8.25	8.40	8.40	8.50	8.65
1909.....	10.75	9.75	8.25	7.75	7.25	9.65	9.75	9.50	10.65	11.15	11.25	11.00
1908.....	6.50	7.50	8.00	8.00	7.50	7.75	7.75	8.75	8.75	8.75	9.75	11.00
1907.....	12.40	12.65	13.15	13.65	13.50	13.75	13.75	13.25	13.25	13.00	9.95	6.50
1906.....	10.90	10.15	9.65	8.15	8.90	8.75	8.75	9.00	9.75	10.25	10.75	12.25
1905.....	10.75	11.25	11.15	10.90	10.15	10.00	9.15	8.40	8.90	9.75	10.50	10.90
1904.....	6.00	5.75	5.40	6.15	7.15	5.65	5.75	5.25	6.25	6.25	7.40	8.75
1903.....	11.25	11.50	11.65	11.25	11.25	.....	.....	9.00	9.00	7.00	.....	5.25
1902.....	8.55	9.15	9.65	10.75	11.75	12.00	11.65	10.75	14.40	15.85	11.65	11.50

No. 1 Railroad Wrought, Chicago, 1915-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$19.15	$17.75	$16.65	$14.60	$14.65	$15.90	$15.90	$17.45	$17.05	$16.30	$17.70	$15.90
1924.....	17.50	17.50	16.05	14.80	13.60	13.25	14.80	15.75	16.70	15.95	17.10	18.75
1923.....	19.40	20.50	23.25	22.75	19.95	16.95	16.60	17.05	18.25	15.30	14.10	16.00
1922.....	11.80	11.65	12.25	13.25	14.35	14.20	15.20	16.35	19.95	20.40	18.10	17.00
1921.....	15.65	15.90	13.50	12.05	11.90	10.80	10.25	11.75	13.05	14.65	13.70	12.10
1920.....	29.00	30.75	30.70	30.70	29.50	28.00	28.10	28.50	27.50	22.50	19.55	16.60
1919.....	23.30	16.65	17.65	18.50	17.05	18.70	21.20	23.25	21.25	22.00	26.50	27.00
1918.....	35.00	35.00	35.00*	35.00	35.00	35.00	35.50	33.50	33.50	33.50	33.50	29.00
1917.....	23.75	24.00	25.75	29.80	32.60	41.75	39.15	35.40	36.25	31.90	30.60	31.50
1916.....	15.50	14.95	16.15	16.80	16.35	15.35	13.95	15.40	16.65	17.50	21.25	26.00
1915.....	8.80	8.90	9.00	8.55	8.75	8.75	8.90	10.10	10.75	10.70	12.75	14.90

* Quotations net tons to March 31, 1918, gross tons thereafter.

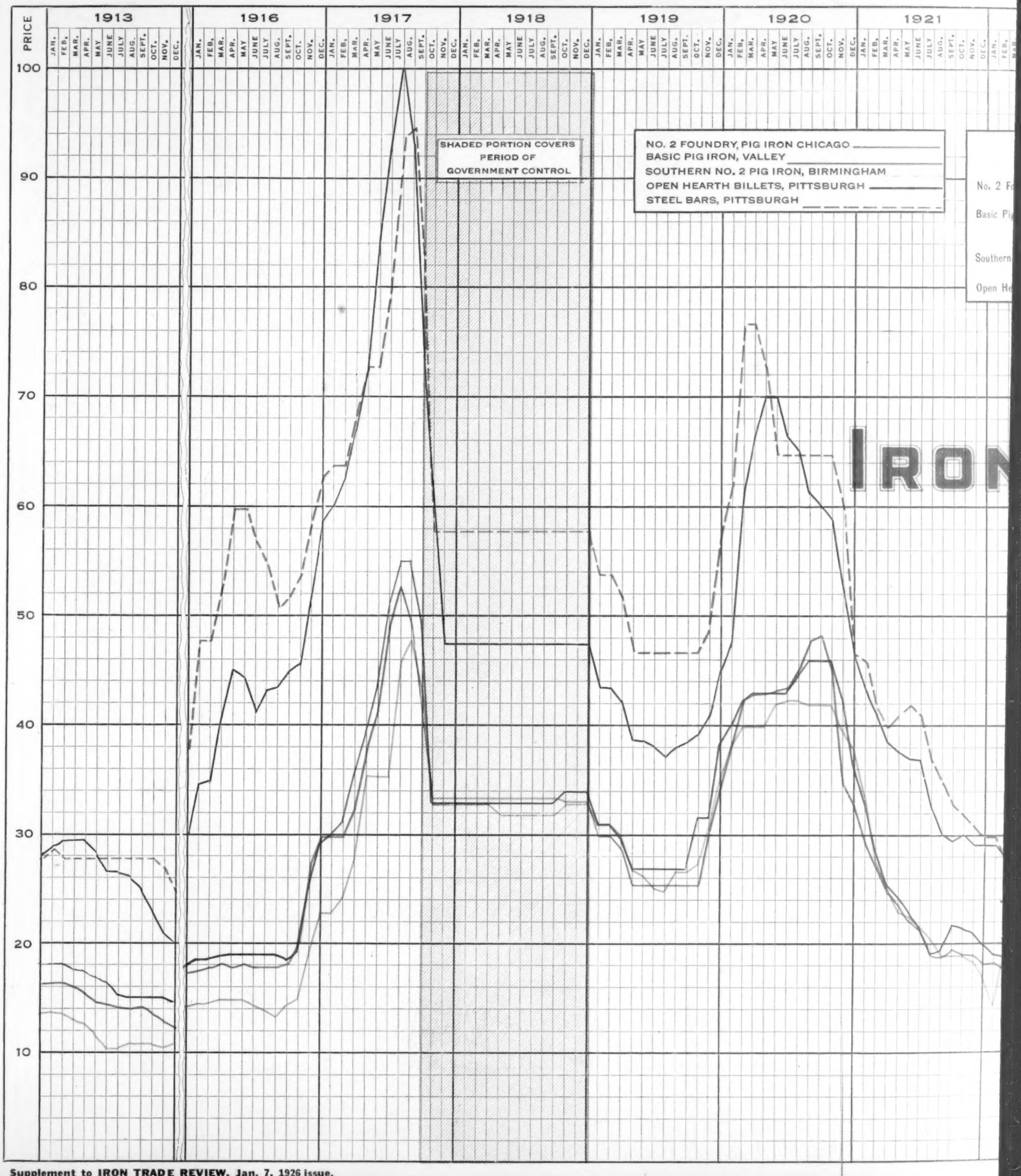
No. 1 Railroad Wrought, Eastern Pennsylvania, 1904-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$21.50	$20.50	$19.50	$18.40	$17.60	$18.20	$18.25	$18.25	$18.25	$18.25	$18.75	$18.75
1924.....	20.10	21.35	19.00	18.40	17.75	$7.75	18.05	18.50	18.75	18.75	18.95	19.00
1923.....	22.25	24.10	27.60	27.00	24.40	22.75	18.85	17.50	19.00	18.00	17.75	19.00
1922.....	15.00	15.00	15.20	15.63	16.80	17.25	18.00	18.00	20.75	22.00	21.00	18.95
1921.....	20.00	20.00	18.20	15.50	15.00	15.00	14.25	14.00	14.20	15.40	16.00	15.75
1920.....	32.90	36.10	36.50	35.25	34.00	33.50	33.50	33.25	34.40	29.85	25.75	20.10
1919.....	29.80	25.00	24.00	21.50	21.90	22.50	24.70	27.25	27.00	27.00	27.85	30.75
1918.....	35.00	35.00	35.00*	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00
1917.....	27.00	26.75	30.00	36.00	40.80	47.85	54.05	46.20	44.50	41.80	35.35	35.00
1916.....	22.25	22.50	23.00	23.00	22.50	20.00	19.75	20.00	21.00	22.00	20.55	26.75
1915.....	11.75	12.00	12.50	12.50	12.50	12.75	13.50	15.00	16.00	16.00	17.00	20.00
1914.....	12.90	14.75	15.25	13.15	13.15	12.65	12.65	12.00	12.50	11.50	11.50	11.50
1913.....	16.25	16.25	15.25	16.25	15.50	14.75	14.70	14.25	14.25	14.25	13.75	13.35
1912.....	15.75	14.75	14.50	14.25	16.25	16.00	15.75	15.25	16.65	16.75	17.75	16.75
1911.....	16.25	16.25	17.75	16.75	15.50	15.25	15.25	15.75	15.75	14.50	14.00	14.45
1910.....	18.75	19.00	18.75	19.25	18.25	16.75	16.25	16.25	16.15	16.75	16.25	16.25
1909.....	20.25	19.25	16.25	15.25	16.25	18.60	17.75	18.75	19.75	20.75	21.25	20.25
1908.....	14.25	14.25	15.25	14.75	15.50	15.75	16.00	16.50	18.25	18.25	18.50	19.75
1907.....	23.25	22.25	21.00	20.50	20.00	20.75	20.25	19.75	18.00	18.00	17.25	14.75
1906.....	22.75	21.00	19.75	20.25	20.75	18.25	17.50	18.25	20.75	22.25	22.25	23.25
1905.....	19.75	21.75	22.00	22.75	21.75	18.75	17.00	17.50	19.50	21.75	19.85	23.25
1904.....	14.65	16.00	16.50	18.25	17.75	14.00	12.75	13.25	14.40	15.25	16.25	19.00

* Quotations net tons to March 31, 1918, gross tons thereafter.

Monthly Iron and Steel Prices For Ten Years and

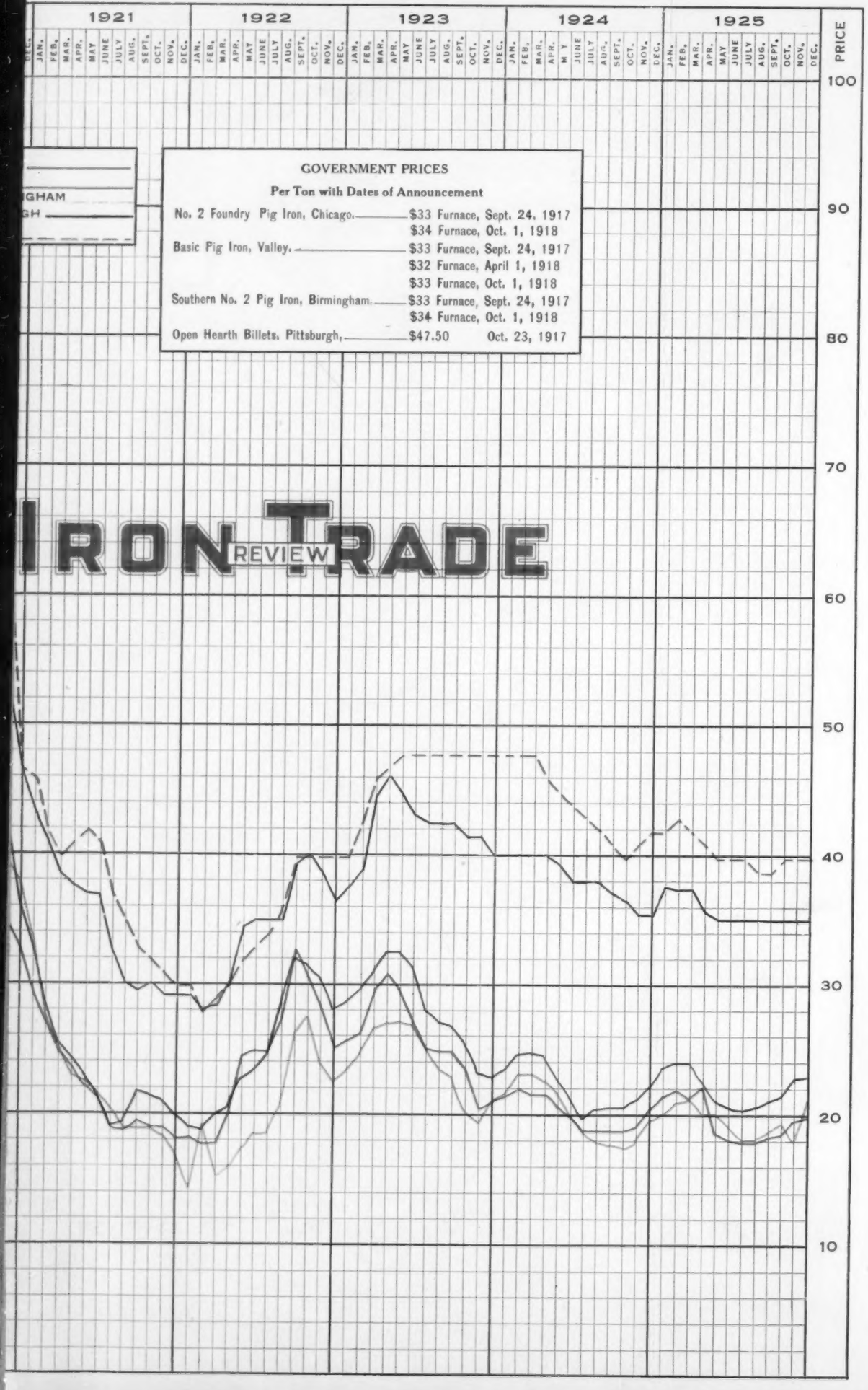
Finished Steel Products in Net Tons, Pig Iron and Billets in



Supplement to IRON TRADE REVIEW, Jan. 7, 1926 issue.

ears and Comparison With 1913

ron and Billets in Gross Tons



Market History—

Low Phosphorus Scrap, Pittsburgh, 1917-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$26.20	$25.35	$23.85	$21.60	$21.75	$22.40	$22.50	$22.50	$23.00	$23.40	$24.00	$24.00
1924.....	23.90	24.25	23.75	20.60	19.30	21.40	21.70	22.00	22.25	22.30	23.50	25.00
1923.....	25 15	27.00	31.30	32.10	28.30	25.00	23.15	22.70	23.50	22.50	20.70	22.50
1922.....	17.50	17.10	17.10	18.60	20.00	20.60	21.00	20.60	22.90	24.85	25.00	24.50
1921.....	24.50	22.00	21.20	18.25	18.00	17.00	15.25	15.50	16.30	18.00	17.65	17.25
1920.....	31.50	33.00	32.60	30.60	30.00	30.75	30.00	33.15	34.00	33.75	31.00	25.50
1919.....	29.40	24.25	22.50	22.40	22.00	21.25	23.00	24.00	24.00	24.00	25.75	27.50
1918.....	42.20	40.00	40.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	38.60	38.50
1917.....	32.00	30.00	33.00	34.25	36.60	43.50	52.75	43.00	47.25	43.50	39.00	39.00

Machine Shop Turnings, Pittsburgh, 1906-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$17.80	$16.00	$14.75	$13.60	$12.75	$13.25	$13.50	$14.50	$14.85	$14.15	$14.85	$14.50
1924.....	15.50	16.10	15.00	13.25	11.10	13.00	13.50	14.00	14.75	14.40	16.00	17.50
1923.....	16.75	18.25	20.65	20.10	18.91	16.60	13.50	11.40	12.75	11.40	11.00	13.50
1922.....	9.50	9.55	10.65	12.30	13.45	13.65	13.75	13.95	15.45	15.40	16.25	15.90
1921.....	10.50	10.50	9.70	8.55	8.50	7.90	7.25	7.65	8.55	10.25	10.25	9.20
1920.....	16.75	19.25	18.40	16.85	15.15	17.65	13.55	15.75	15.80	16.00	14.75	11.60
1919.....	11.50	9.70	9.75	11.15	10.00	10.65	12.70	14.00	13.25	12.75	14.00	15.50
1918.....	20.00	20.00	20.00	19.00	18.70	18.50	18.50	18.50	18.50	18.50	18.50	17.75
1917.....	12.10	12.00	12.45	13.90	14.55	20.80	23.70	21.20	23.25	19.50	19.65	20.00
1916.....	10.35	9.55	10.75	11.20	10.35	10.05	8.55	7.75	7.25	8.00	9.10	12.75
1915.....	7.75	7.90	7.90	7.90	7.90	8.15	8.00	7.65	8.65	8.65	9.15	8.75
1914.....	6.90	7.65	8.70	8.15	8.00	7.90	7.90	7.90	7.90	8.00	7.95	7.75
1913.....	10.65	10.25	9.50	9.00	8.65	7.25	6.75	6.75	6.75	7.15	7.15	6.40
1912.....	10.25	9.75	9.50	10.00	10.25	10.90	11.00	11.00	10.65	10.90	11.50	11.25
1911.....	9.00	9.40	10.50	9.50	9.15	9.15	9.15	9.75	9.65	9.15	9.90	9.35
1910.....	13.25	13.00	12.00	11.75	11.25	10.25	9.25	9.25	9.00	9.00	9.15	9.25
1909.....	13.00	11.75	10.25	8.75	8.25	11.25	11.75	11.50	12.50	13.25	13.75	13.25
1908.....	7.75	8.75	8.75	8.50	8.25	8.25	8.25	9.00	9.50	9.50	10.50	11.75
1907.....	15.25	15.00	15.75	16.00	15.75	15.50	15.50	15.25	14.50	14.00	11.60	7.75
1906.....	.....	.....	12.50	11.75	11.25	11.25	11.25	11.50	12.40	12.25	12.40	14.75

No. 1 Cast, Pittsburgh, 1917-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$19.50	$18.85	$18.35	$17.80	$17.00	$17.00	$17.00	$17.10	$17.50	$17.40	$17.75	$17.50
1924.....	21.30	20.85	19.60	18.35	17.50	17.75	17.70	18.00	18.35	17.70	18.25	18.50
1923.....	22.65	24.50	27.70	27.75	25.60	23.75	21.50	21.20	21.50	19.35	18.50	20.00
1922.....	16.00	16.00	16.40	17.25	18.50	18.70	19.15	19.00	21.75	23.35	23.30	22 50
1921.....	24.50	22.00	21.00	18.25	17.50	16.00	15.00	14.85	16.30	17.50	17.10	16.25
1920.....	32.50	41.50	41.00	39.60	39.00	40.00	38.50	41.50	42.20	40.75	38.00	27.50
1919.....	25.60	21.00	21.00	21.75	21.00	21.00	21.00	24.00	24.50	25.00	28.75	30.50
1918.....	28.00	28.00	28.00	34.00	32.50	32.50	32.50	32.50	32.50	32.50	32.40	32.00
1917.....	20.00	19.75	21.50	23.35	24.60	33.25	34.75	35.00	32.50	28.00	28.50	28.50

No. 1 Cast, Eastern Pennsylvania, 1915-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$20.75	$19.35	$18.50	$18.20	$17.10	$17.75	$17.75	$17.75	$18.65	$18.75	$18.75	$18.00
1924.....	20.75	20.35	19.25	18.35	17.10	17.90	17.80	18.00	18.40	17.95	18.25	19.50
1923.....	23.30	24.75	28.00	26.85	24.80	22.75	21.00	20.00	20.35	19.70	19.50	20.50
1922.....	16.75	16.50	17.00	17.40	17.90	18.50	18.00	18.00	20.65	23.00	21.90	20.50
1921.....	24.15	23.35	20.50	18.15	17.90	17.50	17.50	16.50	16.50	17.50	18.00	17.50
1920.....	36.50	38.55	40.00	38.00	38.00	37.00	37.20	38.75	39.80	38.00	34.75	28.90
1919.....	28.15	25.00	22.50	22.50	21.50	22.00	23.50	24.65	25.00	25.15	28.00	31.75
1918.....	33.50	34.50	33.90	32.75	33.00	33.75	34.00	34.00	34.00	34.00	34.00	34.00
1917.....	20.75	20.15	22.50	26.75	30.00	34.75	38.35	34.10	32.90	30.00	30.50	32.00
1916.....	17.50	17.50	17.75	18.00	17.75	16.50	16.00	16.00	16.25	16.50	18.50	22.00
1915.....	12.00	12.00	12.50	12.50	12.00	12.25	12.25	13.50	14.50	14.50	15.00	15.60

No. 1 Cast, Chicago, 1918-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$22.10	$20.15	$19.70	$18.85	$19.00	$19.50	$19.75	$20.30	$20.15	$19.40	$20.90	$20.50
1924.....	22 10	22.25	20.80	20.00	19.00	17.75	18.60	19.00	20.25	19.20	19.25	20.75
1923.....	24.30	25.75	28.50	27.55	24.20	23.25	23.25	21.20	21.50	20.40	20.55	21.50
1922.....	14.00	14.50	15.10	16.15	17.40	17.30	17.65	19.70	23.80	24.00	22.90	22.00
1921.....	20.35	21.15	18.10	15.25	15.85	14.90	13.75	13.95	14.50	15.25	15.50	14.00
1920.....	42.50	43.25	42.20	44.10	42.50	41.75	41.20	42.00	39.30	32.75	27.65	22.10
1919.....	26.25	22.05	23.10	23.50	22.35	23.40	20.65	27.75	26.75	28.15	31.10	35.35
1918.....	30.00	30.00	33.00	32.45	30.75	31.00	31.80	33.40	34.00	34.00	32.75	29.00

Rerolling Rails, Chicago, 1908-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$20.95	$19.15	$18.15	$15.85	$16.75	$18.15	$17.45	$19.10	$19.00	$18.55	$19.40	$18.80
1924.....	18.90	20.00	19.30	17.10	15.30	14.55	15.50	16.00	17.40	17.20	18.20	19.50
1923.....	20.55	22.00	24.90	23.65	21.80	19.40	18.40	17.75	18.30	16.25	15.10	17.00
1922.....	12.50	11.50	12.85	14.25	15.50	15.40	16.00	16.75	19.40	20.50	18.90	18.00
1921.....	15.80	15.90	13.30	12.70	13.25	12.80	12.45	12.70	13.05	14.00	13.90	12.50
1920.....	33.60	34.65	32.60	32.50	31.50	32.35	34.90	38.00	38.50	34.00	24.15	17.40
1919.....	22.30	15.55	16.30	17.95	17.45	19.25	24.70	29.00	25.38	26.80	31.15	31.50
1918.....	35.30	35.00	35.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00
1917.....	27.25	25.65	27.25	31.90	36.80	46.00	46.25	41.90	41.25	36.00	35.70	35.65
1916.....	17.70	17.10	17.20	17.90	17.25	16.25	15.70	15.70	16.90	18.75	24.90	29.50
1915.....	9.50	9.60	10.00	9.85	10.00	10.00	10.10	11.75	13.15	13.25	14.30	16.70
1914.....	11.00	11.20	11.25	11.25	11.25	11.25	11.25	11.25	10.85	10.00	9.50	9.50
1913.....	16.25	15.50	15.00	14.50	14.00	14.00	12.00	12.50	12.00	12.00	12 00	11.50
1912.....	13.00	13.00	12.75	12.75	13.25	13.50	13.25	13.50	14.75	16.00	16.50	16.50
1911.....	13.50	13.50	13.50	13.00	12.75	12.25	12.25	12.50	12.25	12.25	12.00	12 25
1910.....	17.75	17.75	17.50	17.50	17.25	16.50	16.50	15.50	15.75	15.75	15.00	14.00
1909.....	15.80	15.05	12.80	13.20	14.65	15.50	15.55	16.00	17.20	18.00	20.25	17.70
1908.....	12.30	13.00	12.20	12.75	13.20	14.00	14.45	15.60	16.00	15.70	16.95	17.25

Market History—

Iron Car Wheels, Chicago, 1915-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
1925.....	$21.00	$19.65	$17.50	$16.85	$15.90	$17.40	$17.15	$17.50	$17.60	$17.25	$18.15	$18.40
1924.....	20.60	21.25	19.90	17.50	16.60	15.65	16.40	16.90	18.40	17.90	18.60	19.50
1923.....	25.35	26.50	28.50	27.65	24.30	21.50	20.90	19.60	19.60	18.60	17.85	19.00
1922.....	15.25	14.65	15.90	18.15	18.80	18.25	18.90	20.40	23.50	24.75	24.60	23.75
1921.....	21.50	21.40	16.60	14.45	14.50	13.70	12.75	13.70	14.90	16.15	16.25	15.90
1920.....	36.25	38.75	36.15	38.50	38.25	36.00	35.70	38.40	38.80	37.25	33.25	25.80
1919.....	23.20	21.15	20.00	20.40	20.20	22.00	24.40	25.15	23.50	23.60	28.50	29.75
1918.....	30.40	30.00	30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	27.50
1917.....	19.75	18.30	20.30	23.25	27.20	37.00	36.75	30.70	31.00	25.90	27.50	29.50
1916.....	14.75	14.05	14.05	14.00	13.15	12.50	11.90	12.00	12.25	12.25	15.95	21.00
1915.....	10.00	10.00	10.00	10.00	9.75	9.85	10.30	11.40	11.75	11.75	12.75	14.75

Finished Rolled Material

Per Pound

Steel Bars, Pittsburgh, 1901-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.10c	2.10c	2.10c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c
1924.....	2.40	2.40	2.40	2.30	2.25	2.20	2.15	2.10	2.05	2.00	2.05	2.10
1923.....	2.00	2.15	2.30	2.35	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
1922.....	1.50	1.40	1.45	1.50	1.60	1.65	1.70	1.80	2.00	2.00	2.00	2.00
1921.....	2.35	2.15	2.00	2.05	2.10	2.05	1.85	1.75	1.65	1.60	1.55	1.50
1920.....	3.10	3.85	3.85	3.65	3.25	3.25	3.25	3.25	3.25	3.25	3.00	2.35
1919.....	2.70	2.70	2.60	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.45	2.90
1918.....	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
1917.....	3.20	3.20	3.45	3.65	3.65	4.00	4.70	4.75	4.25	2.90	2.90	2.90
1916.....	2.40	2.40	2.65	3.00	3.00	2.85	2.75	2.55	2.60	2.70	2.95	3.15
1915.....	1.10	1.10	1.15	1.20	1.20	1.20	1.30	1.35	1.30	1.45	1.70	1.90
1914.....	1.20	1.20	1.20	1.15	1.15	1.15	1.15	1.15	1.20	1.15	1.10	1.10
1913.....	1.45	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.35	1.25
1912.....	1.15	1.15	1.10	1.15	1.20	1.20	1.25	1.30	1.35	1.40	1.40	1.40
1911.....	1.40	1.40	1.40	1.40	1.40	1.25	1.25	1.20	1.15	1.10	1.10	1.10
1910.....	1.50	1.45	1.45	1.45	1.45	1.45	1.45	1.40	1.40	1.40	1.40	1.40
1909.....	1.40	1.30	1.20	1.15	1.20	1.20	1.25	1.35	1.40	1.40	1.45	1.50
1908.....	1.60	1.60	1.60	1.60	1.60	1.50	1.40	1.40	1.40	1.40	1.40	1.40
1907.....	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1906.....	2.00	1.75	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.55	1.60
1905.....	1.45	1.45	1.50	1.50	1.50	1.50	1.50	1.50	1.60	1.70	1.80	1.95
1904.....	1.30	1.30	1.35	1.35	1.30	1.30	1.30	1.30	1.35	1.30	1.30	1.40
1903.....	1.65	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.35	1.30
1902.....	1.60	1.50	1.50	1.65	1.80	1.80	1.70	1.75	1.75	1.70	1.60	1.70
1901.....	1.20	1.25	1.45	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.60	1.60

Tank Plates, Pittsburgh, 1895-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.00c	2.10c	2.10c	2.00c	2.00c	2.00c	2.00c	1.90c	1.80c	1.80c	1.85c	1.90c
1924.....	2.50	2.45	2.40	2.35	2.25	2.15	2.10	2.00	1.95	1.80	1.85	1.90
1923.....	2.05	2.15	2.35	2.45	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
1922.....	1.50	1.40	1.45	1.50	1.60	1.65	1.70	1.80	2.00	2.00	2.00	2.00
1921.....	2.65	2.35	2.05	2.15	2.20	2.00	1.85	1.75	1.70	1.60	1.60	1.50
1920.....	3.10	3.70	3.75	3.65	3.50	3.50	3.50	3.50	3.50	3.20	3.00	2.65
1919.....	3.00	3.00	2.90	2.65	2.65	2.65	2.65	2.65	2.55	2.65	2.65	2.70
1918.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
1917.....	4.25	4.30	5.00	5.45	6.40	7.75	9.45	9.20	7.50	3.25	3.25	3.25
1916.....	2.50	2.55	3.15	3.50	3.50	3.50	3.50	3.75	3.70	3.70	3.90	4.25
1915.....	1.10	1.10	1.15	1.15	1.15	1.20	1.25	1.30	1.35	1.45	1.70	1.95
1914.....	1.20	1.20	1.20	1.15	1.15	1.15	1.15	1.15	1.20	1.20	1.10	1.10
1913.....	1.50	1.50	1.50	1.50	1.50	1.45	1.45	1.45	1.40	1.35	1.30	1.20
1912.....	1.15	1.10	1.10	1.20	1.25	1.25	1.30	1.35	1.40	1.45	1.50	1.55
1911.....	1.40	1.40	1.40	1.40	1.40	1.35	1.35	1.30	1.25	1.20	1.10	1.15
1910.....	1.55	1.55	1.50	1.50	1.50	1.45	1.40	1.40	1.40	1.40	1.40	1.40
1909.....	1.60	1.45	1.30	1.20	1.25	1.30	1.35	1.40	1.50	1.50	1.55	1.60
1908.....	1.70	1.70	1.70	1.70	1.70	1.65	1.60	1.60	1.60	1.60	1.60	1.60
1907.....	1.70	1.70	1.70	1.70	1.80	1.80	1.80	1.70	1.70	1.70	1.70	1.70
1906.....	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.70
1905.....	1.45	1.50	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.60	1.60	1.60
1904.....	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.40	1.40	1.40	1.50
1903.....	1.60	1.60	1.75	1.75	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1902.....	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1901.....	1.40	1.40	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1900.....	2.40	2.20	2.00	1.80	1.60	1.35	1.05	1.10	1.05	1.05	1.35	1.40
1899.....	1.30	1.45	1.75	2.05	2.10	2.30	2.45	2.55	2.85	2.80	2.50	2.30
1898.....	1.00	1.00	0.95	1.00	1.10	1.10	1.10	1.10	1.15	1.10	1.10	1.15
1897.....	1.10	1.10	1.10	1.05	1.05	1.00	1.00	1.00	1.00	1.05	1.00	1.00
1896.....	1.40	1.35	1.30	1.35	1.30	1.25	1.25	1.20	1.15	1.15	1.10	1.10
1895.....	1.15	1.10	1.10	1.15	1.20	1.25	1.60	1.70	1.80	1.70	1.60	1.50

Rail Steel Bars, Chicago, 1918-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.03c	2.13c	2.07c	2.00c	2.10c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c	2.00c
1924.....	2.30	2.30	2.30	2.30	2.20	2.15	2.10	2.05	2.05	2.00	2.00	2.00
1923.....	2.00	2.00	2.25	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
1922.....	1.60	1.50	1.50	1.55	1.65	1.65	1.70	1.80	1.95	2.00	2.00	2.00
1921.....	2.50	2.50	2.50	2.15	2.00	2.00	1.95	1.85	1.85	1.75	1.70	1.65
1920.....	2.90	3.20	3.35	3.70	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
1919.....	2.80	2.80	2.80	2.55	2.45	2.45	2.45	2.55	2.55	2.55	2.75	2.85
1918.....	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Market History—

Structural Shapes, Pittsburgh, 1895-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	**2.10c**	**2.10c**	**2.10c**	**2.00c**	**2.00c**	**2.00c**	**2.00c**	**2.00c**	**1.90c**	**1.90c**	**2.00c**	**1.95c**
1924	**2.50**	**2.50**	**2.50**	**2.35**	**2.25**	**2.20**	**2.15**	**2.05**	**2.00**	**2.00**	**2.00**	**2.00**
1923	2.05	2.15	2.35	2.45	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
1922	1.50	1.40	1.45	1.50	1.60	1.65	1.70	1.80	2.00	2.00	2.00	1.95
1921	2.45	2.25	2.10	2.15	2.20	2.05	1.90	1.75	1.70	1.60	1.60	1.50
1920	2.65	3.15	3.25	3.25	3.25	3.25	3.25	3.15	3.10	3.10	3.00	2.45
1919	2.80	2.80	2.70	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.50
1918	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1917	3.10	3.25	3.45	3.70	4.00	4.00	4.50	4.50	3.75	3.00	3.00	3.00
1916	1.85	2.05	2.40	2.50	2.50	2.50	2.50	2.50	2.60	2.70	2.90	3.00
1915	1.10	1.10	1.15	1.15	1.20	1.20	1.25	1.30	1.35	1.40	1.65	1.75
1914	1.20	1.20	1.20	1.20	1.15	1.10	1.10	1.15	1.20	1.15	1.10	1.05
1913	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.40	1.35	1.30	1.25
1912	1.15	1.15	1.15	1.20	1.25	1.25	1.30	1.35	1.40	1.45	1.50	1.55
1911	1.40	1.40	1.40	1.40	1.40	1.35	1.35	1.35	1.35	1.30	1.20	1.15
1910	1.55	1.55	1.50	1.50	1.50	1.45	1.40	1.40	1.40	1.40	1.40	1.40
1909	1.60	1.45	1.30	1.20	1.25	1.30	1.35	1.40	1.50	1.50	1.55	1.60
1908	1.70	1.70	1.70	1.70	1.70	1.65	1.65	1.60	1.60	1.60	1.60	1.60
1907	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
1906	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
1905	1.50	1.55	1.60	1.60	1.60	1.60	1.60	1.60	1.70	1.70	1.70	1.70
1904	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.40	1.40	1.40	1.40
1903	1.75	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1902	1.60	1.60	1.70	1.85	2.00	2.25	2.25	2.35	2.25	2.15	2.10	2.00
1901	1.50	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1900	2.25	2.25	2.25	2.25	2.25	2.05	1.90	1.75	1.70	1.70	1.70	1.70
1899	1.30	1.30	1.40	1.50	1.50	1.75	1.95	2.05	2.25	2.25	2.25	2.25
1898	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.20	1.20	1.20	1.20	1.20
1897	1.55	1.55	1.55	1.55	1.30	1.05	1.00	1.00	1.00	1.10	1.10	1.10
1896	1.45	1.50	1.45	1.45	1.50	1.55	1.55	1.55	1.55	1.55	1.50	1.45
1895	1.25	1.20	1.20	1.20	1.20	1.35	1.50	1.60	1.65	1.60	1.60	1.55

Bar Iron, Chicago, 1907-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	**2.00c**	**2.00c**	**2.10c**	**2.10c**	**2.10c**	**2.05c**	**1.95c**	**1.90c**	**1.90c**	**1.90c**	**2.00c**	**2.00c**
1924	**2.40**	**2.40**	**2.40**	**2.35**	**2.30**	**2.25**	**2.20**	**2.15**	**2.15**	**2.10**	**2.10**	**2.00**
1923	2.35	2.45	2.55	2.60	2.60	2.60	2.55	2.50	2.40	2.40	2.40	2.40
1922	1.60	1.60	1.60	1.65	1.65	1.75	1.80	2.00	2.25	2.50	2.50	2.35
1921	2.75	2.65	2.65	2.50	2.45	2.25	1.95	1.75	1.75	1.75	1.70	1.65
1920	3.15	3.45	3.50	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.50
1919	3.15	2.95	2.85	2.55	2.50	2.55	2.65	2.65	2.65	2.70	2.75	2.75
1918	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1917	3.00	3.00	3.00	3.20	3.40	4.00	4.50	4.50	4.50	4.50	4.00	4.00
1916	1.85	1.90	2.20	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.50	2.60
1915	0.95	1.05	1.10	1.15	1.15	1.15	1.20	1.25	1.30	1.35	1.50	1.70
1914	1.15	1.20	1.15	1.15	1.10	1.10	1.05	1.05	1.05	1.05	0.95	0.95
1913	1.60	1.60	1.60	1.55	1.55	1.55	1.50	1.45	1.35	1.25	1.15	1.15
1912	1.15	1.15	1.15	1.15	1.25	1.25	1.35	1.40	1.45	1.50	1.55	1.55
1911	1.30	1.30	1.25	1.20	1.20	1.20	1.20	1.20	1.20	1.15	1.15	1.15
1910	1.60	1.60	1.55	1.55	1.50	1.45	1.40	1.40	1.40	1.35	1.35	1.30
1909	1.50	1.50	1.40	1.30	1.25	1.30	1.35	1.40	1.50	1.50	1.55	1.60
1908	1.60	1.55	1.55	1.55	1.55	1.55	1.50	1.50	1.50	1.50	1.50	1.50
1907	1.80	1.80	1.80	1.80	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75

No. 28 Black Sheets, Pittsburgh, 1907-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	**3.50c**	**3.50c**	**3.40c**	**3.35c**	**3.25c**	**3.15c**	**3.15c**	**3.15c**	**3.10c**	**3.10c**	**3.25c**	**3.35c**
1924	**3.75**	**3.75**	**3.75**	**3.70**	**3.65**	**3.65**	**3.60**	**3.50**	**3.45**	**3.40**	**3.45**	**3.50**
1923	3.35	3.35	3.55	3.85	3.85	3.85	3.85	3.85	3.75	3.75	3.75	3.75
1922	3.00	3.00	3.00	3.10	3.15	3.15	3.15	3.25	3.40	3.50	3.35	3.30
1921	4.35	4.20	3.90	3.90	4.00	3.90	3.35	3.05	2.80	3.00	2.95	3.00
1920	5.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	6.05	4.45
1919	4.70	4.70	4.60	4.35	4.35	4.30	4.30	4.35	4.35	4.35	4.35	4.35
1918	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1917	4.55	4.55	5.05	5.75	7.00	8.15	9.00	9.00	8.75	7.75	5.30	5.00
1916	2.55	2.60	2.75	2.90	2.95	2.90	2.90	2.75	2.85	3.20	3.65	4.45
1915	1.80	1.80	1.80	1.80	1.80	1.80	1.75	1.85	1.90	2.05	2.20	2.50
1914	1.85	1.95	1.95	1.90	1.85	1.80	1.80	1.90	1.95	1.95	1.90	1.80
1913	2.30	2.35	2.35	2.35	2.35	2.30	2.25	2.20	2.10	2.00	1.95	1.90
1912	1.90	1.85	1.80	1.85	1.95	1.95	2.00	2.05	2.10	2.20	2.25	2.25
1911	2.20	2.20	2.20	2.15	2.15	2.00	2.00	1.95	1.90	1.85	1.85	1.90
1910	2.40	2.40	2.40	2.35	2.30	2.25	2.20	2.20	2.15	2.15	2.15	2.15
1909	2.40	2.40	2.30	2.20	2.20	2.20	2.20	2.20	2.20	2.30	2.40	2.40
1908	2.55	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
1907	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60

No. 10 Blue Annealed Sheets, Pittsburgh, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	**2.70c**	**2.70c**	**2.65c**	**2.55c**	**2.45c**	**2.30c**	**2.30c**	**2.30c**	**2.25c**	**2.25c**	**2.40c**	**2.50c**
1924	**2.95**	**2.90**	**2.95**	**2.80**	**2.80**	**2.80**	**2.75**	**2.70**	**2.70**	**2.60**	**2.60**	**2.70**
1923	2.50	2.50	2.70	**2.80**	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.90
1922	2.25	2.25	2.25	**2.35**	2.40	2.40	2.40	2.45	2.50	2.60	2.60	2.50
1921	3.55	3.55	3.05	**2.95**	3.10	3.00	2.55	2.40	2.30	2.50	2.40	2.25
1920	4.05	5.50	5.50	**4.85**	5.00	5.00	5.00	5.00	5.00	5.00	4.95	3.65
1919	3.90	3.90	3.80	**3.55**	3.55	3.50	3.50	3.55	3.55	3.55	3.55	3.55
1918	4.25	4.25	4.25	**4.25**	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
1917	4.10	4.35	4.70	**5.35**	6.65	8.00	8.50	8.50	8.50	7.85	4.75	4.25
1916	2.45	2.60	2.85	**3.00**	3.05	3.10	3.00	3.00	2.95	3.15	3.30	3.90
1915	1.30	1.30	1.30	**1.30**	1.35	1.35	1.35	1.35	1.50	1.60	1.85	2.25
1914	1.35	1.40	1.40	**1.40**	1.35	1.35	1.35	1.35	1.40	1.40	1.40	1.35
1913	1.70	1.75	1.75	**1.75**	1.75	1.75	1.70	1.65	1.60	1.55	1.45	1.40

Market History—

No. 28 Galvanized Sheets, Pittsburgh, 1903-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	4.75c	4.75c	4.70c	4.55c	4.35c	4.20c	4.20c	4.20c	4.20c	4.25c	4.50c	4.60c
1924.....	4.95	4.90	4.90	4.85	4.80	4.80	4.70	4.60	4.60	4.60	4.60	4.60
1923.....	4.35	4.35	4.65	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.85	4.90
1922.....	4.00	4.00	4.00	4.10	4.15	4.15	4.15	4.25	4.40	4.50	4.35	4.35
1921.....	5.70	5.50	5.05	4.90	5.00	4.90	4.35	4.05	3.80	4.00	3.95	4.00
1920.....	6.35	7.00	7.25	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.35	5.85
1919.....	6.05	6.05	5.95	5.70	5.70	5.65	5.65	5.70	5.70	5.70	5.70	5.70
1918.....	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
1917.....	6.55	6.80	6.80	7.55	8.80	9.95	10.25	10.25	9.70	8.80	6.50	6.25
1916.....	4.75	4.75	4.80	4.85	4.85	4.80	4.35	4.25	4.20	4.45	5.05	6.25
1915.....	2.75	3.00	3.40	3.30	3.40	4.45	4.55	3.95	3.65	3.50	3.90	4.75
1914.....	2.85	2.95	2.95	2.90	2.80	2.75	2.75	2.85	2.95	2.95	2.85	2.80
1913.....	3.45	3.50	3.50	3.50	3.40	3.40	3.30	3.25	3.15	3.05	2.95	2.85
1912.....	3.20	3.20	3.00	3.00	3.10	3.10	3.10	3.30	3.50	3.50	3.50	3.50
1911.....	3.20	3.20	3.20	3.20	3.20	3.00	3.00	3.00	2.80	3.00	3.00	3.20
1910.....	3.70	3.70	3.70	3.70	3.50	3.20	3.20	3.20	3.20	3.20	3.20	3.20
1909.....	3.40	3.30	3 40	3.40	3.40	3.50	3.50	3.50	3.60	3.60	3.70	3.70
1908.....	3.70	3.70	3.70	3.60	3.50	3.50	3.50	3.50	3.30	3.30	3.20	3.20
1907.....	4.00	4.00	4.00	3.80	3.80	3.80	3.70	3.70	3.60	3.60	3.50	3.50
1906.....	3.60	3.60	3.70	3.80	3.80	3.80	3.80	3.90	3.80	4.00	4.00	4.00
1905.....	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1904.....	3.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.50
1903.....	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.50	3.50	3.50

Tin Plate, Pittsburgh, 1903-1925

Per Base Box, 100 lbs., Pittsburgh

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50	$5.50
1924.....	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
1923.....	4.75	4.75	4.95	4.95	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
1922.....	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
1921.....	7.00	7.00	7.00	6.65	6.25	6.25	5.65	5.25	5.15	5.00	4.80	4.75
1920.....	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1919.....	7.35	7.35	7.25	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1918.....	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75
1917.....	6.90	7.00	7.50	7.50	7.90	9.25	10.00	10.00	10.00	10.00	8.20	7.75
1916.....	3.75	3.75	4.15	4.70	5.15	5.55	5.80	6.00	5.60	5.75	6.05	6.50
1915.....	3.10	3.10	3.10	3.20	3.20	3.10	3.10	3.10	3.10	3.10	3.35	3.60
1914.....	3.40	3.40	3.40	3.40	3.40	3.30	3.25	3.45	3.55	3.35	3.15	3.20
1913.....	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.55	3.50	3.40
1912.....	3.40	3.40	3.50	3.50	3.50	3.50	3.50	3.70	3.70	3.70	3.70	3.60
1911.....	3.70	3.70	3.70	3.60	3.60	3.60	3.60	3.50	3.50	3.40	3.40	3.40
1910.....	3.50	3.50	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
1909.....	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.50	3.50	3.50
1908.....	3.60	3.60	3.60	3.60	3.60	3.50	3.50	3.50	3.50	3.50	3.50	3.40
1907.....	3.90	3.90	3.90	3.90	3.80	3.80	3.70	3.70	3.70	3.60	3.60	3.60
1906.....	3.50	3.50	3.50	3.60	3.70	3.70	3.80	3.90	3.90	3.90	4.00	4.00
1905.....	3.50	3.50	3.50	3.50	3.50	3.40	3.40	3.40	3.30	3.30	3.40	3.50
1904.....	3.40	3.40	3.30	3.30	3.20	3.20	3.20	3.10	3.30	3.40	3.50	3.50
1903.....	3.80	3.80	3.90	3.90	3.80	3.80	3.70	3.70	3.60	3.60	3.60	3.50

Cold Finished Steel Bars, Pittsburgh, 1920-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.80c	2.80c	2.75c	2.70c	2.70c	2.60c	2.55c	2.50c	2.50c	2.45c	2.50c	2.50c
1924.....	3.00	3.00	3.00	3.00	3.00	2.90	2.85	2.80	2.75	2.70	2.70	2.80
1923.....	2.50	2.65	2.85	3.00	3.25	3.25	3.25	3.25	3.25	3.25	3.00	2.90
1922.....	2.00	1.90	1.85	1.85	2.00	2.00	2.05	2.15	2.50	2.50	2.50	2.50
1921.....	3.60	3.60	3.10	3.05	3.10	3.00	2.75	2.50	2.40	2.25	2.15	2.00
920.....	3.65	3.85	4.50	5.25	4.40	4.50	4.10	4.55	4.25	4.10	4.00	3.60

Plain Wire, Pittsburgh, 1915-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.60c	2.60c	2.60c	2.55c	2.50c	2.45c	2.50c	2.50c	2.50c	2.50c	2.50c	2.50c
1924.....	2.75	2.75	2.75	2.75	2.70	2.65	2.60	2.60	2.55	2.50	2.50	2.60
1923.....	2.45	2.60	2.65	2.70	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1922.....	2.25	2.20	2.25	2.25	2.25	2.25	2.25	2.25	2.40	2.45	2.45	2.45
1921.....	3.25	3.20	3.00	3.00	3.00	2.75	2.50	2.50	2.60	2.60	2.60	2.25
1920.....	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.20	3.25	3.25	3.25
1919.....	3.25	3.25	3.20	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.15	3.25
1918.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
1917.....	2.95	2.95	3.10	3.20	3.45	3.60	3.95	3.95	3.95	3.85	3.25	3.25
1916.....	1.95	2.10	2.25	2.25	2.45	2.45	2.45	2.55	2.55	2.60	2.80	2.95
1915.....	1.30	1.35	1.40	1.40	1.35	1.35	1.40	1.40	1.55	1.60	1.70	1.90

Wire Nails, Pittsburgh, 1907-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.85c	2.85c	2.85c	2.20c	2.25c	2.75c	2.65c	2.65c	2.65c	2.65c	2.65c	2.65c
1924.....	3.00	3 00	3.00	3.00	2.95	2.90	2.85	2.85	2.80	2.75	2.75	2.85
1923.....	2.70	2.75	2.90	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
1922.....	2.50	2.45	2.40	2.40	2.40	2.40	2.40	2.40	2.65	2.70	2.70	2.70
1921.....	3.25	3.00	3.00	3.25	3.25	3.00	2.75	2.75	2.90	2.90	2.90	2.50
1920.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
1919.....	3.50	3.50	3.45	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.45	3.50
1918.....	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1917.....	3.00	3.00	3.15	3.20	3.50	3.65	4.00	4.00	4.00	3.90	3.50	3.50
1916.....	2.15	2.20	2.40	2.40	2.50	2.50	2.50	2.60	2.60	2.65	2.85	3.00
1915.....	1.50	1.55	1.60	1.60	1.55	1.55	1.60	1.60	1.70	1.75	1.85	2.00
1914.....	1.55	1.60	1.60	1.60	1.60	1.55	1.55	1.55	1.60	1.60	1.60	1.50
1913.....	1.75	1.75	1.75	1.80	1.80	1.80	1.75	1.70	1.65	1.60	1.60	1.60
1912.....	1.55	1.60	1.60	1.60	1.60	1.60	1.60	1.65	1.70	1.70	1.75	1.75
1911.....	1.70	1.75	1.80	1.80	1.75	1.80	1.70	1.70	1.65	1.65	1.55	1.55
1910.....	1.85	1.85	1.85	1.85	1.80	1.80	1.70	1.70	1.70	1.70	1.65	1.70
1909.....	1.95	1.95	1.95	1.95	1.60	1.70	1.70	1.80	1.80	1.80	1.80	1.85
1908.....	2.05	2.05	2.05	2.05	2.05	2.00	1.95	1.95	1.95	1.95	1.95	1.95
1907.....	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.05	2.05	2.05	2.05

Market History—

Cold Rolled Strip, Pittsburgh, 1910-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	4.10c	4.15c	4.05c	4.00c	3.85c	3.65c	3.75c	3.75c	3.75c	3.75c	3.90c	3.90c
1924.....	5.00	4.80	4.80	4.75	4.50	4.50	4.35	4.20	4.00	4.00	4.00	4.15
1923.....	4.50	4.65	4.80	5.15	5.25	5.25	5.00	5.00	5.00	5.00	5.00	4.75
1922.....	3.50	3.50	3.50	3.60	3.70	3.95	4.00	4.00	4.25	4.50	4.50	4.50
1921.....	6.25	6.25	5.65	5.50	5.50	5.00	4.40	3.90	3.75	3.75	3.80	3.75
1920.....	5.65	7.00	8.80	8.50	8.50	8.50	8.50	8.50	7.35	8.50	8.00	6.85
1919.....	6.25	6.25	6.10	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65
1918.....	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1917.....	6.50	6.50	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.50	6.50
1916.....	4.25	4.65	5.50	6.00	6.00	6.00	6.00	6.00	6.00	6.50	6.50	6.50
1915.....	2.75	2.75	2.75	2.75	2.75	2.85	2.85	3.00	3.10	3.25	3.50	3.75
1914.....	3.05	3.05	3.05	3.05	3.05	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1913.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.05
1912.....	2.95	2.95	2.95	2.95	3.00	3.05	3.05	3.05	3.05	3.15	3.20	3.25
1911.....	2.95	2.95	3.25	3.25	3.25	2.95	2.95	2.95	2.95	2.95	2.95	2.95
1910.....	....	....	....	....	....	....	2.95	2.95	2.95	2.95	2.95	2.95

Hot Rolled Strip, Pittsburgh, 1917-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.35c	2.40c	2.35c	2.20c	2.20c	2.20c	2.20c	2.20c	2.20c	2.25c	2.30c	2.30c
1924.....	3.00	2.95	2.85	2.75	2.60	2.55	2.50	2.50	2.45	2.35	2.25	2.35
1923.....	2.75	2.85	3.10	3.30	3.30	3.30	3.20	3.15	3.10	3.00	3.00	2.75
1922.....	2.00	1.80	1.80	1.95	2.05	2.35	2.50	2.50	2.75	2.90	2.90	2.80
1921.....	3.30	3.30	2.85	2.75	2.75	2.70	2.50	2.30	2.15	2.15	2.25	2.00
1920.....	3.70	4.80	5.25	5.45	5.50	5.50	5.50	5.50	5.50	5.50	5.00	3.90
1919.....	3.80	3.55	3.30	3.25	3.05	3.05	3.10	3.30	3.30	3.30	*3.30	*3.30
1918.....	4.50	4.50	4.50	4.50	4.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1917.....	....	....	....	....	....	7.25	7.25	7.25	7.00	7.00	5.25	4.50

* First quarter 1920 delivery.

Hoops, Pittsburgh, 1908-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.45c	2.45c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.45c	2.50c	2.50c
1924.....	3.00	3.00	2.85	2.75	2.75	2.70	2.60	2.60	2.55	2.50	2.50	2.50
1923.....	2.75	2.85	3.10	3.30	3.30	3.30	3.15	3.15	3.15	3.15	3.00	2.90
1922.....	1.95	1.85	1.80	1.95	2.05	2.35	2.45	2.55	2.75	2.90	2.90	2.80
1921.....	3.05	3.05	2.70	2.75	2.75	2.70	2.45	2.40	2.30	2.25	2.20	2.15
1920.....	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
1919.....	3.30	3.30	3.25	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
1918.....	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1917.....	3.50	3.50	3.90	4.10	4.70	5.75	6.00	6.00	6.00	6.00	4.60	3.50
1916.....	2.00	2.25	2.55	2.75	2.75	2.75	2.75	2.80	3.00	3.00	3.25	3.25
1915.....	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.30	1.40	1.50	1.75	1.95
1914.....	1.40	1.30	1.30	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
1913.....	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.50	1.40
1912.....	1.30	1.25	1.25	1.25	1.25	1.25	1.35	1.40	1.40	1.45	1.50	1.50
1911.....	1.50	1.50	1.45	1.45	1.45	1.45	1.40	1.40	1.35	1.35	1.30	1.30
1910.....	1.60	1.60	1.60	1.60	1.50	1.55	1.55	1.55	1.50	1.50	1.50	1.50
1909.....	1.80	1.75	1.60	1.60	1.50	1.40	1.40	1.40	1.50	1.50	1.50	1.55
1908.....	2.00	2.00	2.00	2.00	2.00	1.90	1.80	1.80	1.80	1.80	1.80	1.80

Bands, Pittsburgh, 1916-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.40c	2.45c	2.50c	2.50c
1924.....	3.00	3.00	2.85	2.75	2.75	2.70	2.60	2.60	2.40	2.40	2.40	2.40
1923.....	2.75	2.85	3.10	3.30	3.30	3.30	3.15	3.15	3.15	3.15	3.00	2.90
1922.....	1.75	1.75	1.70	1.85	2.05	2.35	2.45	2.55	2.75	2.90	2.90	2.80
1921.....	3.05	3.05	2.70	2.75	2.75	2.70	2.35	2.20	2.20	2.25	2.15	2.00
1920.....	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
1919.....	3.30	3.30	3.25	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
1918.....	2.90	2.90	2.90	2.90	3.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1917.....	3.00	3.00	3.35	3.35	3.60	5.50	6.00	6.00	6.00	6.00	4.30	2.90
1916.....	1.85	2.05	2.35	2.50	2.50	2.50	2.50	2.60	2.60	2.60	2.75	2.90

Angle Bars, Chicago, 1914-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c	2.75c
1924.....	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1923.....	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1922.....	2.45	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.50	2.75	2.75	2.75
1921.....	2.75	2.75	2.75	2.70	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.55
1920.....	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1919.....	3.00	3.00	3.00	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1918.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.15
1917.....	2.25	2.25	2.35	2.75	2.95	3.25	3.45	3.25	3.25	3.25	3.25	3.25
1916.....	1.50	1.50	1.50	1.50	1.90	2.00	2.00	2.00	2.00	2.15	2.25	2.25
1915.....	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
1914.....	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Market History—

Tie Plates, Chicago, 1915-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.35c	2.45c	2.45c	2.40c	2.35c	2.35c	2.35c	2.35c	2.35c	2.35c	2.35c	2.35c
1924.....	2.60	2.60	2.60	2.60	2.60	2.60	2.55	2.45	2.45	2.35	2.35	2.35
1923.....	2.40	2.45	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
1922.....	1.90	1.85	1.75	1.80	1.85	1.85	1.85	2.00	2.20	2.35	2.35	2.35
1921.....	3.00	3.00	3.00	2.75	2.50	2.50	2.40	2.15	2.00	2.00	2.00	1.90
1920.....	2.75	2.75	2.75	2.75	2.75	2.75	2.80	3.00	3.00	3.00	3.00	3.00
1919.....	3.00	3.00	3.00	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1918.....	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
1917.....	2.75	2.75	2.90	3.00	3.00	3.00	3.40	3.50	3.50	3.50	3.50	3.45
1916.....	1.80	2.05	2.25	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.75
1915.....	....	....	....	....	....	....	....	....	1.50	1.50	1.70	1.80

Track Bolts, Chicago, 1914-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	3.90c	4.00c	4.00c	4.00c	3.95c	3.90c	3.90c	3.90c	3.90c	3.90c	3.90c	3.90c
1924.....	4.10	4.10	4.10	4.10	4.10	4.10	3.90	3.80	3.80	3.80	3.80	3.80
1923.....	3.90	4.05	4.15	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
1922.....	3.60	3.50	3.50	3.60	3.90	3.90	3.60	3.60	3.80	3.85	3.85	3.85
1921.....	5.00	5.00	5.00	4.85	4.75	4.45	4.40	4.15	3.65	3.65	3.65	3.60
1920.....	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.75	4.95	5.00	5.00	5.00
1919.....	4.90	4.90	4.90	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
1918.....	4.90	4.85	5.05	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10
1917.....	4.25	4.50	4.50	4.55	5.00	5.05	5.55	5.25	5.25	5.25	5.25	5.15
1916.....	2.60	2.65	3.20	3.25	3.25	3.25	3.25	3.25	3.25	3.60	4.20	4.25
1915.....	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.10	2.10	2.35	2.50
1914.....	2.05	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Railroad Spikes, Pittsburgh, 1916-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.90c	2.90c	2.85c	2.80c	2.80c	2.80c	2.80c	2.75c	2.75c	2.80c	2.80c	2.80c
1924.....	3.05	3.05	3.05	3.00	2.95	2.90	2.80	2.80	2.75	2.70	2.75	2.80
1923.....	2.85	2.90	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.05
1922.....	2.25	2.15	2.05	2.20	2.25	2.30	2.25	2.30	2.80	2.80	2.75	2.75
1921.....	3.65	3.65	3.30	3.30	3.25	3.25	3.00	2.75	2.45	2.35	2.30	2.25
1920.....	3.45	3.70	3.95	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.75
1919.....	3.65	3.65	3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
1918.....	4.00	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
1917.....	3.40	3.40	3.50	3.65	3.90	4.20	4.70	6.20	6.50	6.15	5.00	4.75
1916.....	2.15	2.25	2.50	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	3.25

Structural Rivets, Pittsburgh, 1913-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	2.60c	2.55c	2.50c	2.50c	2.45c	2.40c	2.45c	2.40c	2.40c	2.40c	2.60c	2.60c
1924.....	2.85	2.75	2.75	2.65	2.60	2.55	2.50	2.50	2.55	2.60	2.60	2.60
1923.....	3.00	3.00	3.25	3.25	3.25	3.25	3.15	3.00	3.00	3.00	2.75	2.90
1922.....	2.25	2.00	2.00	2.05	2.20	2.35	2.40	2.45	3.00	3.00	3.00	3.00
1921.....	4.15	3.90	3.70	3.60	3.30	3.00	2.70	2.35	2.30	2.40	2.30	2.30
1920.....	4.15	4.40	4.50	4.50	4.50	4.50	4.50	4.50	4.60	4.75	4.75	4.50
1919.....	4.40	4.20	4.20	3.70	3.70	3.70	3.70	3.90	3.90	3.90	4.00	4.05
1918.....	4.65	4.65	4.65	4.65	4.60	4.40	4.40	4.40	4.40	4.40	4.40	4.40
1917.....	4.25	4.25	4.50	4.75	5.05	5.25	5.25	5.25	5.25	5.25	5.00	4.65
1916.....	2.60	2.75	3.10	3.35	3.90	4.25	4.05	4.00	4.00	4.00	4.10	4.25
1915.....	1.45	1.45	1.45	1.45	1.45	1.50	1.50	1.50	1.60	1.75	2.30	2.45
1914.....	1.60	1.60	1.60	1.60	1.60	1.55	1.50	1.50	1.55	1.50	1.45	1.45
1913.....	2.20	2.20	2.20	2.20	2.15	2.15	2.10	2.00	2.00	1.90	1.80	1.75

Cast Iron Pipe, New York, 1918-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$61.05	$61.05	$60.05	$58.15	$58.05	$57.05	$57.05	$57.05	$56.50	$57.05	$57.05	$57.05
1924.....	66.10	66.10	66.10	66 10	66.10	65.10	65.10	64.10	64.10	64.10	62.10	60 60
1923.....	56.50	57.30	58.40	58.70	59.00	59.00	59.00	59.20	63.60	63.60	62.80	66.60
1922.....	47.30	47.30	47.60	48.80	48.80	49.80	53.30	54.50	55.30	55.30	55.30	55.30
1921.....	63.30	63.30	63.30	63.30	61.30	52.70	48.55	47.05	45.30	47.55	47.30	47.30
1920.....	67.30	70.30	71.30	73.30	76.30	76.30	76.30	76.30	77.20	77.20	77.20	77.20
1919.....	66.20	62.70	61.65	57.70	56.70	52.70	52.70	53.10	54.30	56.70	58.30	61.30
1918.....	55.35	55.35	55.35	55.35	56.55	61.35	62.30	62.50	62.70	67.50	67.70	67.70

Cast Iron Pipe, Chicago, 1918-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$49.00	$50.20	$48.20	$46.10	$46.95	$47.95	$48.20	$49.20	$49.45	$49.20	$50.20	$50.20
1924.....	56.00	57.20	57 20	56.95	55.40	55.20	52.20	52.70	52.20	50.00	48.00	47 00
1923.....	51.20	53.20	53.70	55.20	57.20	57.20	59.20	60.45	59.20	57.95	56.85	59.20
1922.....	41.60	42.10	43.00	43.85	44.70	46.60	45.55	45.20	47.85	52.20	51.20	51.20
1921.....	64.10	64.10	64.10	64.10	64.10	51.50	47.60	44.35	42.90	42.60	42.60	42.60
1920.....	67.55	71.30	72.80	74.40	76.80	76.80	76.80	76.80	81.50	83.10	83.10	83.10
1919.....	64.30	61.80	60.55	56.80	54.80	51.80	52.60	54.80	55.80	59.80	59.80	63.80
1918.....	54.30	54.30	54.30	54.30	55.50	60.80	62.05	61.85	61.80	66.80	66.80	66.80

Cast Iron Pipe, Birmingham, 1918-1925

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925.....	$40.00	$40.00	$40.00	$39.60	$38.50	$40.00	$40.00	$41.00	$41.00	$41.75	$42.00	$42.00
1924.....	46.80	47 50	48 00	48 00	48 00	48 00	47 00	47.00	45 00	44 40	46 00	40 00
1923.....	43.00	45.00	45.50	46.75	49.00	49.00	49.00	49.00	49.00	49.00	49.00	51.00
1922.....	35.00	34.00	33.00	34.15	34.70	37.00	37.00	37.30	40.00	43.00	43.00	43.00
1921.....	55.00	55.00	55.00	55.00	55.00	42.50	40.00	39.50	38.00	36.50	32.50	35.00
1920.....	60.00	64.50	66.00	67.00	70.00	70.00	70.00	70.00	72.40	74.00	74.00	74.00
1919.....	58.75	55.00	54.50	53.00	52.00	48.00	48.00	48.00	48.00	50.00	53.00	56.75
1918.....	49.00	49.00	49.00	49.00	50.20	55.00	55.00	55.00	55.00	60.00	60.00	60.00

Composite Market Record

Weekly and Monthly Averages of Fourteen Iron and Steel Products, 1922-1925

Compiled by Iron Trade Review

1925	
Dec. 16	$39.10
Dec. 9	39.10
Dec. 2	39.17
Nov. 25	38.89
Nov. 18	38.84
Nov. 11	38.76
Nov. 4	38.44
Average for November	38.73
Oct. 28	37.95
Oct. 21	37.61
Oct. 14	37.43
Oct. 7	37.43
Average for October	37.61
Sept. 30	37.42
Sept. 23	37.40
Sept. 16	37.35
Sept. 9	37.35
Sept. 2	37.21
Average for September	37.35
Aug. 26	37.21
Aug. 19	37.45
Aug. 12	37.45
Aug. 5	37.43
Average for August	37.39
July 29	37.45
July 22	37.45
July 15	37.45
July 8	37.45
July 1	37.45
Average for July	37.45
June 24	37.33
June 17	37.43
June 10	37.65
June 3	38.01
Average for June	37.60
May 27	38.04
May 20	38.21
May 13	38.49
May 6	38.75
Average for May	38.37
Apr. 29	38.85
Apr. 22	39.05
Apr. 15	39.43
Apr. 8	39.69
Apr. 1	40.22
Average for April	39.45
Mar. 25	40.33
Mar. 18	40.63
Mar. 11	40.83
Mar. 4	41.02
Average for March	40.70
Feb. 25	41.02
Feb. 18	41.06
Feb. 11	41.22
Feb. 4	41.22
Average for February	41.13
Jan. 28	41.00
Jan 21	41.10
Jan. 14	41.05
Jan. 7	40.92
Average for January	41.02

1924	
Dec. 31	$40.70
Dec. 24	40.70
Dec. 17	40.14
Dec. 10	39.94
Dec. 3	39.58
Average for December	40.21
Nov. 26	39.46
Nov. 19	39.21
Nov. 12	38.79
Nov. 5	38.56
Average for November	39.00
Oct. 29	38.61
Oct. 22	38.65
Oct. 15	38.65
Oct. 8	38.67
Oct. 1	38.67
Average for October	38.65
Sept. 24	38.87
Sept. 17	38.95
Sept. 10	39.15
Sept. 3	39.23
Average for September	39.05
Aug. 27	39.35
Aug. 20	39.37
Aug. 13	39.31
Aug. 6	39.29
Average for August	39 33
July 31	39.47
July 24	39.53
July 17	39.89
July 10	39.91
July 3	40.13
Average for July	39.78
June 25	40.37
June 18	40.55
June 11	40.66
June 4	40.84
Average for June	40.61
May 28	41.14
May 21	41.22
May 14	41.56
May 7	41.58
Average for May	41.38
Apr. 30	41.72
Apr. 23	42.01
Apr. 16	42.47
Apr. 9	42.55
Apr. 2	42.91
Average for April	42.33
Mar. 27	43.13
Mar. 20	43.25
Mar. 13	43.27
Mar. 6	43.29
Average for March	43.24
Feb. 28	43.39
Feb. 21	43.53
Feb. 14	43.53
Feb. 7	43.49
Average for February	43.49
Jan. 30	43.39
Jan. 23	43.35
Jan. 16	43.29
Jan. 9	43.21
Jan. 2	43.06
Average for January	43.26

1923	
Dec. 26	$43.02
Dec. 19	43.00
Dec. 12	43 05
Dec. 5	43.02
Average for December	43.02
Nov. 28	43.80
Nov. 21	42.63
Nov. 14	42.74
Nov. 7	43.09
Average for November	42.81
Oct. 31	43.32
Oct. 24	43.70
Oct. 17	43.90
Oct. 10	44.06
Oct. 3	44.23
Average for October	43.84
Sept. 26	44.47
Sept. 19	44.70
Sept. 12	44.72
Sept. 5	44.68
Average for September	44.64
Aug. 29	44.84
Aug. 22	44.84
Aug. 15	44.84
Aug. 8	44.88
Aug. 1	44.97
Average for August	44.87
July 25	45.09
July 18	45.26
July 11	45.49
July 4	45.72
Average for July	45.39
June 27	46.16
June 20	46.34
June 13	46.53
June 6	46.79
Average for June	46.46
May 30	47.26
May 23	47.44
May 16	47.48
May 9	47.70
May 2	47.70
Average for May	47.52
Apr. 25	47.34
Apr. 18	47.15
Apr. 11	46.87
Apr. 4	46.69
Average for April	47.01
Mar. 28	46.55
Mar. 21	45.33
Mar. 14	44.95
Mar. 7	44.41
Average for March	45.31
Feb. 28	43.81
Feb. 21	42.57
Feb. 14	42.24
Feb. 7	41.83
Average for February	42.61
Jan. 31	41.61
Jan. 24	41.41
Jan. 17	41.13
Jan. 10	41.05
Jan. 3	40.67
Average for January	41.17

1922	
Dec. 27	$40.65
Dec. 20	40.54
Dec. 13	40.23
Dec. 6	40.69
Average for December	40.53
Nov. 29	41.40
Nov. 22	41.78
Nov. 15	42.41
Nov. 8	42.72
Nov. 1	43.08
Average for November	42.08
Oct. 25	43.42
Oct. 18	43.56
Oct. 11	43.88
Oct. 4	44.07
Average for October	43.60
Sept. 27	44.26
Sept. 20	44.18
Sept. 13	43.80
Sept. 6	43.79
Average for September	43.79
Aug. 30	41.41
Aug. 23	40.92
Aug. 16	39.69
Aug. 9	38.75
Aug. 2	38.16
Average for August	39.79
July 26	37.67
July 19	37.45
July 12	37.45
July 5	37.43
Average for July	37.50
June 28	37.26
June 21	37.12
June 14	36.74
June 7	36.72
Average for June	36.96
May 31	36.64
May 24	36.62
May 17	36.60
May 10	36.50
May 3	36.08
Average for May	36.49
Apr. 26	36.44
Apr. 19	34.75
Apr. 12	34.02
Apr. 5	33.45
Average for April	34.42
Mar. 29	33.36
Mar. 22	32.80
Mar. 15	32.87
Mar. 8	32.86
Mar. 1	32.81
Average for March	32.97
Feb. 22	32.86
Feb. 15	32.88
Feb. 8	32.89
Feb. 1	32.92
Average for February	32.86
Jan. 25	33.27
Jan. 18	33.36
Jan. 11	33.54
Jan. 4	33.64
Average for January	33.35

Monthly Averages During Earlier Years

1921	
December	$33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.86

1920	
December	54.04
November	63.75
October	68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59

1919	
December	54.88
November	51.28
October	48.76
September	48 35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32

1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68

1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10

1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50

1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76

1914	
December	21.58
November	23.39
October	22 84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23 60
February	23 52
January	23.03
Average for year	22.92

THE FRAZER IS ONE OF THE LARGE NEW MINES ON THE MESABI RANGE

Iron Mine Operators Have Active Year

(*Concluded from Page 76*)

vibrating screens. The undersize is sintered on a 64-foot sintering machine and the sinter is screened on a ½-inch screen. The oversize of the ⅝-inch screen is washed to remove the few remaining fines, and shipped.

Approximately one-half of the crude ore goes to the sintering machine and the remainder is shipped direct in the form of lump. The sintering machine has a rated capacity of 500 tons per day. The sinter averages 60 per cent, natural, metallic iron. It has been found that the sinter absorbs almost no moisture and does not freeze in the winter. Ores as low as 40 per cent natural metallic will make a 60 per cent sinter.

This type of plant has proved to be peculiarly fitted to the class of ore upon which it is working which is high in volatile matter and low in silica. The sinter is a high-grade ore of very porous structure and averages slightly under 1 inch in size. The lump consists of the oversize on a ⅝-inch screen and has a rubbly, friable structure.

Mine Stripping Active

Stripping operations have been fairly active, and several large mines are ready to begin shipping in 1926. The Minnewas, Mesabi range first opened as an underground mine in 1893, has been stripped of about 4,000,000 cubic yards overburden since January 1923. It is a state lease, covering 80 acres, and is operated by the Oliver mining company. This company also is prepared to ship ore from the new Frazer mine. Nine million cubic yards of overburden was removed from this mine during the last five years.

Pickands, Mather & Co. started open-pit shipping during the year from the Corsica, another large mine on the Mesabi range. The Corsica was opened as an underground operation 24 years ago, and has yielded 5,000,000 tons of ore. The addition of an open pit at this property involved the removal of 2,500,000 cubic yards of overburden.

John A. Savage & Co. were active at the Sagamore mine, Cuyuna range, in stripping. The pit has a large new area stripped and cleaned. The crushing and drying plant has been adjusted. All ore over 5 inches in diameter from the shovels is crushed. This company's Croft mine expects to resume production this winter.

Considerable stripping was done on the south side of the Mahnomen mine, Cuyuna range, during the early part of the year by Clement K. Quinn & Co., in rock benching for main line tracks. This company acquired the Sultana-Hopkins properties, consisting of 120 acres, north of the Mahnomen. Stripping of the Sultana-Hopkins began in September, and the company plans to move 1,250,000 cubic yards by May 1, having available for shipment next season another manganiferous ore body. The company also acquired the Empire mine, 160 acres, in the Cascade district, south of Negaunee, Marquette range, Michigan, and is equipping it for open-pit mining. A large crushing plant will be installed. This property will be a producer of siliceous ore.

Ready for Larger Demand

To meet demand for siliceous ore the Cleveland-Cliffs company has opened the Ogden mine, Marquette range, and has enlarged its central crushing plant at Negaunee, to handle the increased output. The mine shipped about 70,000 tons of siliceous ore last season, and is preparing for larger development this year.

In underground development, Oglebay, Norton & Co. continued to sink the shaft at the Eureka mine, Gogebic range, Michigan, notable for being the deepest iron mine in the Lake Superior district. The base of this shaft will be bottomed at 2250 feet.

The use of electric power continues to show remarkable expansion. Progress is apparent mainly in the electrification of underground mining equipment, although more of the larger types of shovels for surface and open-pit work are being operated electrically.

The M. A. Hanna Co., pioneer in all-electrical equipment for open-pit mining is understood to be considering plans for electrification of the Susquehanna mine. Pickands, Mather & Co. installed electrically operated shovels in the Scranton pit during the year, and will have more in operation next year.

The Oliver Iron Mining Co. has completed the electrification of its underground properties at the Spruce and Leonidas mines at Eveleth, Minn., Mesabi range, and at the Soudan mine, Tower, Minn., Vermillion range.

Iron Ore Shipments

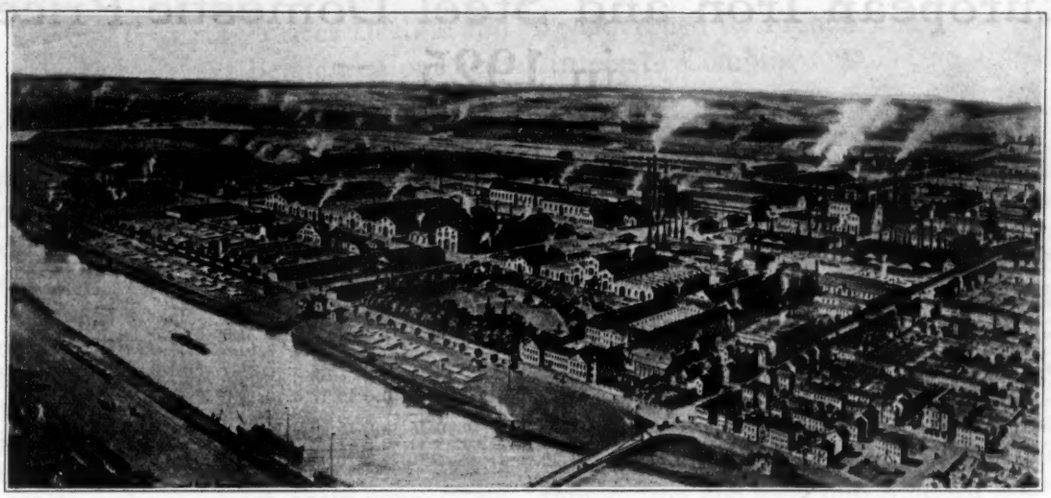
By Ranges

	1924	1925
*Mesabi	29,141,665	35,525,647
*Vermillion	978,097	1,356,483
*Cuyuna	1,468,940	1,402,421
Total Minnesota	31,588,702	38,284,551
*Gogebic	5,159,838	6,664,501
*Marquette	3,174,660	3,938,379
*Menominee	3,836,707	5,193,865
Mayville, etc.	135,203	155,000
Misc. shipments, all rail	†	1,313,000
Grand total	43,895,110	55,549,296

*Includes lake shipments only in 1925.
†Absorbed in range figures for 1924.

By Ports and Railroads

	—Gross tons—	
Escanaba	1924	1925
C. & N. W.	2,952 549	3,666,301
C. M. & St. P.	1,292,120	1,977,977
Marquette		
D. S. S. & A.	1,051,996	1,251,027
L. S. & I.	1,464,552	2,235,941
Ashland		
C. & N. W.	3,526,117	4,920,127
Soo Line	1,281,448	1,744,374
Superior		
Great Northern	12,060,142	13,158.056
Soo Line	670,877	872,121
Northern Pacific	624,195	530,300
Duluth		
D. M. & N.	12,882,082	17,707,978
Two Harbors		
D. & I. R.	4,817,494	6,016,096
Total	42,623,572	54,081,298
1925 increase		11,457,726



General View of Cockerill Works, Seraing, Belgium

European Market Reviews for 1925

Reports by Iron Trade Review
Staff Correspondents

Great Britain
France
Belgium
Luxemburg
Germany
Austria
Czecho-Slovakia
Hungary
Poland
Russia

European Iron and Steel Domestic Prices in 1925

British Prices in Pounds Sterling Per Gross Ton

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d
Foundry No. 3 pig iron, Silicon 2.50-3.00	4. 0.7	3.18.10	3.18. 0	3.17. 3	3.15. 7	3.13.7	3.11.7	3.10.0	3. 8.5	3. 6.6	3. 6.0	3. 6.0
Basic pig iron	4. 0.0	4. 0. 0	4. 0. 0	3.18. 6	3.16. 0	3.15.0	3.15.0	3.12.6	3. 9.7	3. 7.1	3. 5.0	3. 5.0
Furnace coke	0.17.3	0.16. 7	0.15.10	0.15. 9	0.14. 8	0.13.8	0.13.0	0.12.8	0.12.6	0.12.0	0.12.9	0.13.6
Billets	6.11.3	6.15. 0	6.10. 0	6. 7. 6	6. 5. 0	6. 4.0	5.15.0	5.15.0	5.15.0	5.13.9	5.10.0	5.10.0
Standard rails	8.10.0	8.10. 0	8.10. 0	8.10. 0	8. 7. 6	8. 1.0	8. 0.0	8. 0.0	8. 0.0	8. 0.0	8. 0.0	8. 0.0
Merchant bars	8.11.3	8.10. 0	8.10. 0	8. 8. 9	8. 2. 6	8. 0.0	7.17.6	7.16.6	7.15.0	7.10.0	7.10.0	7. 5.0
Shapes	8. 9.4	8. 5. 7	8. 5. 0	8. 2. 6	8. 0. 0	7.19.6	7.17.6	7.11.6	7. 5.0	7. 0.0	6.13.6	6.10.0
Plates, ship, bridge and tank	9. 5.0	9. 5. 0	9. 5. 0	8.17. 6	8.11.10	8. 7.0	8. 0.0	7.18.0	7.13.9	7.10.0	7. 6.0	7. 5.0
Sheets, black, 24 gage	13. 0.0	12.10. 0	12.10. 0	11.15. 0	11.12. 6	11. 0.0	10.17.6	10.15.0	10.13.9	10.10.0	10.10.0	10.10.0
Sheets, galvanized, 24 gage, corrugated	17. 5.0	17. 0. 7	16. 7. 6	16.10.10	16.10. 0	16. 8.0	16. 0.0	16. 3.3	16. 5.0	16. 6.3	16.12.6	16.12.6
Plain wire	11. 0.0	11. 0. 0	11. 0. 0	11. 0. 0	11. 0. 0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0
Bands and Strips	11.10.0	11.10. 0	11.10. 0	11.10. 0	11. 7. 6	10.19.0	10.15.0	10.15.0	10. 7.6	10. 5.0	10. 5.0	10. 5.0

German Prices in Renten Marks Per Metric Ton

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foundry No. 3 pig iron, Silicon 2.50-3.00	88	89	90	90	90	90	90	88	87	85	85	85
Basic pig iron	98	98	97	97	97	97	97	93	91	89	88	88
Furnace coke	24	24	24	24	24	24	24	24	24	24	23	22
Billets	124	126	120	120	120	120	120	120	120	120	119	119
Standard rails	138	137	139	142	142	142	142	142	142	142	142	142
Merchant bars	142	139	130	130	134	134	131	131	129	129	130	130
Shapes	128	132	126	126	130	131	129	130	130	130	132	131
Plates, ship, bridge and tank	150	151	142	140	143	142	133	142	146	145	144	142
Sheets, black, 24 gage	275	287	280	273	273	270	250	238	237	235	225	225
Sheets, galvanized, 24 gage, corrugated	493	507	500	450	400	400	380	368	371	355	346	340
Plain wire	179	185	185	183	185	185	182	186	190	160	150	150
Bands and Strips	165	172	162	161	164	161	159	154	152	153	156	155

French Prices in French Francs Per Metric Ton

F.O.B. Channel Ports or Antwerp

PIG IRON	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foundry, No. 3, Silicon, 2.50-3.00	335	341	340	347	340	335	335	325	306	327	361	370
Basic	340	356	370	375	375	371	349	340	315	316	367	385
Basic bessemer	322	325	330	336	330	325	325	320	311	319	358	370
Hematite, Phosphorous 0.02-0.05	421	427	433	443	430	422	429	426	430	449	481	485
SEMIFINISHED STEEL												
Billets	476	481	486	486	487	512	521	490	472	482	520	545
Wire rods	617	650	643	625	610	631	615	590	600	620	683	710
FINISHED STEEL												
Standard rails	500	505	510	510	483	483	510	525	525	557	674	715
Merchant bars	527	543	528	523	525	550	559	560	563	565	630	650
Structural shapes	501	498	503	500	502	535	536	542	552	540	586	605
Plates, ship, bridge and tank	685	668	661	665	641	676	675	666	662	657	688	690
Sheets, black, 24 gage	1250	1250	1236	1200	1200	1200	1200	1200	1200	1152	1225	1240
Sheets, galvanized, corrugated, 24 gage	1745	1758	1740	1740	1740	1767	1860	1855	1855	1822	1725	1725
Bands and strips	677	685	686	680	700	700	700	700	737	800	800	800
Plain wire, base	977	1002	984	942	897	898	905	900	910	910	950	1025
Galvanized wire, base	1270	1275	1272	1180	1195	1198	1180	1150	1150	1162	1240	1350
Wire nails, base	1042	1055	1012	972	981	1000	975	950	1000	1000	1000	1025

Belgian Prices in Belgian Francs Per Metric Ton

F.O.B. Antwerp

PIG IRON	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foundry, No. 3, Silicon 2.50-3.00	360	350	350	357	352	340	327	322	315	334	322	315
Basic	360	350	347	355	352	334	326	325	320	321	325	320
Basic bessemer	342	335	332	340	336	330	311	310	310	311	317	315
SEMIFINISHED STEEL												
Billets	508	502	502	500	496	521	520	497	480	478	467	465
Wire rods	662	680	653	632	630	642	625	618	670	626	611	605
FINISHED STEEL												
Standard rails	590	555	550	525	525	528	525	525	520	535	605	640
Merchant bars	563	551	540	540	542	575	570	575	560	560	560	560
Structural shapes	542	522	514	517	520	547	555	555	550	540	523	515
Plates, ship, bridge and tank	674	667	659	662	661	685	682	678	675	665	612	590
Sheets, black, 24 gage	1250	1231	1128	1130	1100	1214	1207	1170	1125	1111	1105	1090
Sheets, galvanized, 24 gage, corrugated	2262	2293	2180	2225	2185	2250	2282	2270	2250	2250	2225	2200
Bands and strips	786	772	752	737	706	720	712	740	750	745	722	710
Plain wire, base	887	937	880	850	781	773	800	800	800	812	850	850
Galvanized wire, base	1137	1187	1140	1087	1030	1027	1050	1050	1050	1062	1100	1100
Wire nails	887	937	920	900	831	813	850	850	850	862	865	855

Continent Dominates Markets

Great Britain Loses Ground in Foreign Business—Germany Improves Her Exports—Prices Decline and Are Governed by French and Belgian—Continental Interests Combine

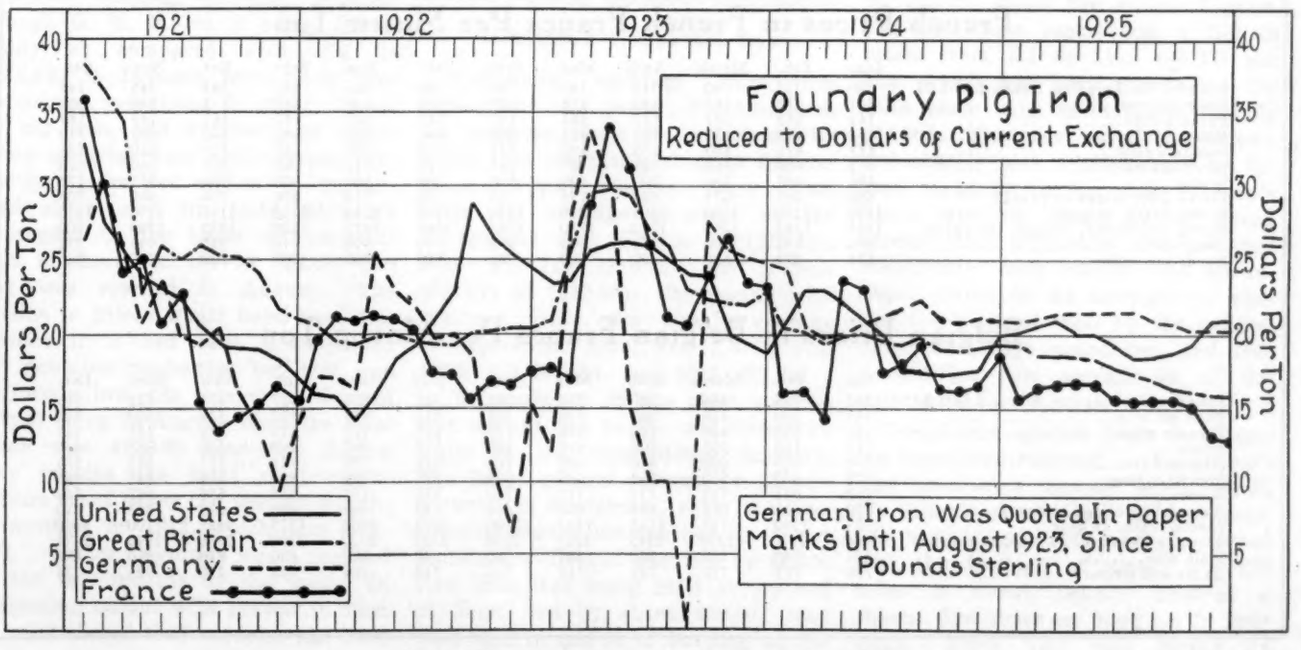
By Vincent Delport
European Manager, Iron Trade Review

ISOLATED against powerful continental interests, Great Britain last year lost ground in the contest between European nations to capture the iron and steel markets of the world. Forced down by French and Belgian values, British prices dropped untiringly from one end of the year to the other. British chiefs of industry are alive to the problems they have to face; they are conscious of the underlying strength of their country and must now use this strength to the utmost limit in order to meet their competitors

If one compares the foreign trade returns for 1924 and 1925, a marked contrast is immediately apparent in the progress made by the three leading continental producing countries and Great Britain respectively. In 1924 the combined iron and steel exports from the Belgo-Luxemburg Union, France and Germany averaged about 8,500,000 tons, including the Ruhr, as against 3,853,000 tons for Great Britain. Last year Britain still led but her exports receded to about 3,720,000 tons. French, Belgo-Luxemburg and German shipments exceeded 9,000,000 tons. Furthermore, in 1925 British imports increased by over 250,000 tons, mostly from the Continent, whereas France alone reduced her imports by at least 500,000 tons.

Figures of exports and imports of the principal countries compiled by IRON TRADE REVIEW are shown on page 119 of this issue. The outstanding feature is the figure of Germany's exports in 1925 which for the first time covers the whole of Germany's present territory. France's gain on the previous year in export trade was about 18.75 per cent; her imports dropped to barely 200,000 tons. Belgium's position was impaired by a strike of half a year's duration. It will be seen that the conditions of the European iron and steel market had no marked effect on the export trade of the United States, but imports of foreign iron and steel into America last year were about 67.5 per cent more than in 1924.

With regard to the future, the relative position of each country is ever shifting. Germany cannot continue her progress without capital. France has benefited by the depreciation of her currency; this is a dangerous and transient advantage. Furthermore, she is only beginning to develop outside markets and to acquire the experience in iron and steel export trade which her neighbors are enjoying. Great Britain's outlook is confused. Her iron and steel masters are claiming protection which they stand little chance of obtaining. Better remedies would appear to be more team work and specialization. Opposite her the Continent is organizing by combining interests which have a common aim and by creating export facilities such as those offered by the German raw steel and pig iron unions.



European Iron and Steel Export Prices in 1925

F. O. B. Ports of Shipment

British Prices in Pounds Sterling Per Gross Ton

	Jan. £ s d	Feb. £ s d	March £ s d	April £ s d	May £ s d	June £ s d	July £ s d	Aug. £ s d	Sept. £ s d	Oct. £ s d	Nov. £ s d	Dec. £ s d
PIG IRON												
Foundry, No. 3, Middlesbrough	4. 1.0	3.19.0	3.18.0	3.17.6	3.15.9	3.14.0	3.11.6	3.10.0	3. 8.6	3. 6.6	3. 6.0	3. 6.0
Basic, Middlesbrough	4. 0.0	4. 0.0	4. 0.0	3.19.3	3.16.0	3.15.0	3.15.0	3.12.6	3. 9.6	3. 7.0	3. 5.0	3. 5.0
Scotch Foundry	4.10.0	4. 7.6	4. 7.6	4. 7.0	4. 7.0	4. 4.6	4. 2.6	4. 2.6	4. 0.0	3.19.6	3.17.9	3.17.0
Hematite East Coast	4. 7.9	4. 7.0	4. 5.0	4. 3.0	4. 1.6	3.19.9	3.17.0	3.16.0	3.15.0	3.14.3	3.14.6	3.14.6
SEMIFINISHED STEEL												
Billets	6.10.0	6.15.0	6.10.0	6. 5.0	6. 5.0	6. 5.0	5.15.0	5.15.0	5.15.0	5.15.0	5.10.0	5.10.0
Wire rods	11. 0.0	11. 0.0	11. 0.0	10.10.0	9.10.0	9.10.0	9.10.0	9.10.0	9. 5.6	9. 5.0	9. 5.0	9. 5.0
FINISHED STEEL												
Standard rails	8.10.0	8.10.0	8.10.0	8.10.0	8. 5.6	8. 0.0	8. 0.0	8. 0.0	8. 0.0	7.15.0	7. 7.0	7. 5.0
Merchant bars	8. 5.0	8. 5.0	8. 5.0	8. 5.0	8. 0.0	8. 0.0	7.17.6	7.16.6	7.15.0	7. 5.0	7. 5.0	7. 0.0
Structural shapes	8. 0.0	8. 0.0	8. 0.0	8. 0.0	8. 0.0	7.10.0	7.10.0	7.11.6	7. 2.6	6.15.0	6. 8.6	6. 5.0
Plates, ship, bridge and tank	8.15.0	8.15.0	8.15.0	8.10.0	8.10.0	8. 7.0	8. 0.0	7.18.0	7.11.3	7. 5.0	7. 3.6	7. 0.0
Sheets, black, 24 gage	12.10.0	12. 0.0	12. 0.0	11.15.0	11.12.6	11. 0.0	10.17.6	10.15.0	10.11.3	10. 5.0	10. 5.0	10. 5.0
Sheets, galvanized, 24 gage, corrugated	17. 5.0	17. 0.0	16. 7.6	16.11.0	16.10.0	16. 8.0	16. 0.0	16. 3.6	16. 5.0	16. 5.0	16.12.6	16.12.6
Bands and strips	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	10.15 0	10.15.0	10.15.0	10. 7.6	10. 5.0	10. 5.0	10. 5.0
Plain wire, base	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0	11. 0.0
Galvanized wire, base	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0	14. 0.0
Wire nails, base	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0	14.10.0
Tinplate, base box 108 pounds	1. 3.6	1. 3.6	1. 2.2	1. 2.2	1. 1.0	1. 0.0	0.19.6	0.19.0	0.19.4	0.19.6	1. 0.0	1. 0.0
Furnace coke	0.16.9	0.16.9	0.16.0	0.15.9	0.14.7	0.13.8	0.13.0	0.12.7	0.12.6	0.12.0	0.12.9	0.13.6
Ferromanganese	15. 0.0	15.10.0	15.10.0	15.10.0	15.10.0	15.10.0	15.10.0	15.10.0	15. 7.6	15. 5.0	15. 5.0	15. 5.0

German Prices in Pounds Per Metric Ton

F. O. B. Rotterdam or North Sea Ports

	Jan. £ s d	Feb. £ s d	March £ s d	April £ s d	May £ s d	June £ s d	July £ s d	Aug. £ s d	Sept. £ s d	Oct. £ s d	Nov. £ s d	Dec. £ s d
PIG IRON												
Foundry, No. 3, Silicon 2.50-3.00	4.10.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	3.17.0	3.11.9	3.10.0	3.10.0
Basic	4.10.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	4. 3.0	3.14.3	3. 2.0	3. 2.0
Hematite	5.15.0	5. 5.0	5. 0.0	5. 0.0	5. 0.0	5. 0.0	5. 0.0	4.16.0	4.10.0	4. 0.0	4. 0.0	4. 0.0
SEMIFINISHED STEEL												
Billets	5.17.6	5.10.0	5. 3.0	5. 3.6	5. 5.6	5. 4.0	5. 3.0	5. 2.0	4.17.0	4.17.0	5.10.0	5.10.0
Wire rods	6.17.9	7. 2.6	6.18.3	7. 1.0	6.19.9	6. 4.0	6. 0.3	6. 2.6	5.15.0	5.18.3	6. 0.0	6. 0.0
FINISHED STEEL												
Standard rails	6. 5.0	6. 0.0	6. 0.0	6. 5.0	6. 5.6	6. 7.6	6.10.0	6.10.0	6.10.0	6.10.0	6.10.0	6.10.0
Merchant bars	5.17.9	6. 0.0	5.17.6	5.19.6	6. 5.0	6. 0.6	5.16.0	5.14.3	5. 8.0	5. 8.0	5. 7.0	5. 6.0
Structural shapes	5.15.0	5.14.6	5.10.0	5.14.4	5.11.3	5. 8.0	5.12.3	5.11.9	5. 8.0	5. 5.0	5. 6.0	5. 7.0
Plates, ship, bridge and tank	6.17.6	7. 2.6	6.19.6	7. 0.6	6.19.0	6.15.0	6. 7.9	6. 9.0	6.10.0	6. 6.9	6. 5.0	6. 5.0
Sheets, black, 24 gage	13.13.9	13. 8.9	12.10.0	12.16.6	13.10.0	13.16.0	12.17.6	12.15.0	12.15.0	12. 3.9	12. 0.0	12. 0.0
Sheets, galvanized, 24 gage, corrugated	17.10.0	17.10.0	17. 0.0	17. 0.0	17. 0.0	17. 5.0	17.12.6	18. 0.0	18. 0.0	17. 1.3	16.15.0	16.15.0
Bands and strips	8.10.0	8.15.0	9.10.0	8.10.0	7.17.6	7. 7.0	7.13.6	7.16.6	7. 5.3	6.11.3	7. 8.9	7. 8.0
Plain wire, base	8.10.0	8.13.9	9. 5.0	8. 8.3	8. 0.0	8. 1.9	8. 6.0	8. 5.0	8. 5.0	7. 5.0	7. 5.0	7. 5.0
Galvanized wire, base	10. 5.0	10. 7.3	11. 0.0	10. 6.6	10. 0.0	9.16.3	9. 9.0	9. 5.0	9. 5.0	9. 3.9	9. 0.0	9. 0.0
Wire nails, base	12.10.0	12.17.6	14. 0.0	13.15.0	12.10.0	11. 0.0	10. 5.0	9.14.0	10. 0.0	10. 0.0	10. 0.0	10. 0.0
Tinplate, base box 108 pounds	1. 3.6	1. 8.0	1. 8.0	1. 8.0	1. 8.0	1. 8.0	1. 7.6	1. 7.0	1. 7.0	1. 7.0	1. 7.0	1. 7.0

French Prices in French Francs Per Metric Ton

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foundry No. 3 pig iron, Silicon 2.50-3.00	309	327	340	345	345	345	345	345	345	345	345	345
Basic pig iron	311	331	342	340	338	319	330	330	345	334	345	365
Furnace coke	142	142	142	142	142	142	142	142	142	142	143	143
Billets	434	460	450	450	442	440	440	440	440	440	465	510
Standard rails	477	491	510	520	492	533	528	530	530	529	560	575
Merchant bars	512	530	542	545	545	545	545	545	560	569	560	610
Shapes	486	495	500	500	500	500	500	500	500	500	535	575
Plates, ship, bridge and tank	680	667	671	684	755	761	770	770	820	794	690	705
Sheets, black, 24 gage	1250	1250	1240	1205	1210	1210	1210	1210	1210	1195	1190	1210
Sheets, galvanized, 24 gage, corrugated	1745	1742	1740	1750	1750	1765	1869	1875	1830	1750	1700	1700
Plain wire	970	981	1000	950	905	898	910	910	910	910	935	935
Bands and strips	671	672	680	680	700	700	700	700	700	700	730	745

Belgian Prices in Belgian Francs Per Metric Ton

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foundry No. 3 pig iron, Silicon 2.50-3.00	363	355	354	360	352	341	327	324	327	334	322	315
Basic pig iron	345	340	336	342	336	332	315	313	320	328	320	315
Furnace coke	146	145	140	140	135	135	125	125	125	125	125	125
Billets	515	510	502	500	495	520	517	497	490	486	467	465
Standard rails	590	567	600	600	600	578	525	525	525	537	575	575
Merchant bars	572	567	560	552	535	555	582	585	585	584	585	585
Shapes	550	544	542	532	525	530	555	557	555	556	563	565
Plates, ship, bridge and tank	680	697	676	675	670	665	687	683	680	679	665	650
Sheets, black, 24 gage	1275	1240	1145	1135	1125	1100	1175	1150	1125	1125	1100	1080
Sheets, galvanized, 24 gage, corrugated	2460	2310	2250	2245	2215	2250	2325	2320	2300	2300	2240	2225
Plain wire	885	940	880	850	805	780	800	800	800	810	850	850
Bands and strips	790	775	750	745	715	735	740	745	725	710	725	725

Gloomy Year For British Steel

Shipbuilding Depression Reacted on Steel Consumption—Pig Iron Output Also Down—American Buying Favorable Feature—Serious Foreign Competition Forced Prices Down

By Joseph Horton
British Correspondent, Iron Trade Review

THE year 1925 in the British iron and steel industry failed to justify even the modest and cautious optimism which the signs in January appeared to encourage. Generally, unemployment was rather worse in November than January. The proportion out of work at the beginning of the year was in iron and shale mines 18.6 per cent, at blast furnaces 18, iron and steelworks 27.6, tin plate and sheet mills 45, engineering 12.1 and shipbuilding 31.9. Unemployment in iron mining at the end of the year increased to 26.7 and at blast furnaces to 21.4. The slight increase of activity at iron and steelworks reduced the percentage to 24.3. Tin plate and steel mills showed a striking change for the better being only 8.9. Engineering showed a small improvement from 12.7 to 11.3. Shipbuilding went from bad to worse with an additional 6 per cent out of work.

Operating blast furnaces which numbered 167 on Jan. 1 had reduced Nov. 1 to 136. The figures of activity at the tin plate and sheet mills reflect the decided recovery during the last three months of the year, tin plate mills at work numbering 401 against 332 in January and steel sheet mills 123 compared with 113.

Prices dropped steadily, Middlesbrough G. M. B. No. 3 being £3 6s ($16) as compared with £4 1s ($18.65) in January, with fairly proportionate reductions in other classes of pig iron, and finished and unfinished material were also cheaper. Reductions were not serious in galvanized sheets and tin plate, although in regard to the latter an unprofitable minimum of 18s 9d ($4.60) per box was reached in August. The decline in prices would have been less serious if it had been accompanied by increased production but this was uniformly low, the minimum of steel output being in August when the total made was 477,100 tons and during four months the total steel manufacture went below the prewar monthly average of 1913, which was 638,600. Better figures were realized in the last months of the year. In comparing output with prewar it must be remembered that capacity has been increased at least 50 per cent, with the tendency of expansion in this respect accelerating.

A feature once more challenging attention is the small output of pig iron. Whereas steel production fluctuated around the prewar total, pig iron output which was 574,500 tons in January reduced to 444,500 tons in August. The prewar figure for 1913, never since realized was 855,000 per month. The marked recovery in October to 473,700 tons, is largely accounted for by business with America. Curious fluctuations are shown in foreign business in pig iron, the greatest contrast being between January with 30,832 tons exported and September totaling 14,423. These figures relate to forge and foundry iron. After the dismal experience of September, October proved the best of the ten months, registering 36,324 tons. In that month, also the highest total of exports was reached, namely 378,308 tons, the September total of 277,907 tons being the poorest. Under several heads of finished material October shows a remarkable increase in exports while in galvanized sheets and tin plate the same month was also the best of the ten. The signs are that Britain is making some progress toward meeting European competition.

Workmen's Wages Are Low

Workmen's earnings were low throughout the year. Practically in all districts, they are regulated by a pro rata relation with price fluctuations. Typical months were June, when the average earnings of the workpeople were £2 19s 5d ($14.52), July £3 11d ($16.75) and August £2 17s 3d ($13.80). Comparing with previous years, the weekly average in September, 1920, was £5 7s 11d, 1922, £2 13s 8d, and 1923 £3 5d.

The weakness of the steel position was mainly due to the unsatisfactory state of the shipbuilding industry. The latest general returns by Lloyd's register, in September, show that the shipping under construction in Great Britain and Ireland was less by 84,000 tons than that being built at the end of June, and by about 459,000 tons than that in course of building at the end of September, 1924. The present total (1,009,155 tons) is the lowest since December, 1909, and is 881,000 tons less than the average amount under construction during the twelve months immediately preceding the war. As a set-off against these figures, the tonnage on which work was commenced during the third quarter showed an increase as compared with the previous quarter, the respective tonnages being 260,551 and 189,805 tons.

The close of the year found the various branches of the trade practically without any organized attempt to regulate prices. Such organizations seldom withstand the stress of a falling market. In March the stabilization of prices scheme in the Welsh tin plate trade came to a sudden and unexpected end, in spite of the fact that only a few weeks earlier a decision had been arrived at to continue it to the end of the year. The committee was established two years ago jointly by the Welsh plate and sheet manufacturers association and the South Wales Siemens steel association, the two main conditions being the establishment of an agreed price and the supply by the steel men of all the bars required subject to a rebate of 7s 6d ($1.72) below the standard price. The immediate result was a fall in prices from £1 2s 1½d ($5.33) per box, which had been maintained for some time, to a minimum of 18s 9d ($4.60). The sacrifice of the scheme undoubtedly was a misfortune to the steel trade, as the tin plate manufacturers were at liberty to buy cheap foreign steel, a freedom of which they undoubtedly took considerable advantage. Later on all attempts to control the price of steel by the general association were abandoned, and free competition now prevails in all departments.

Complaints against high local rating have been constant, and high railway rates are a constant grievance. F. W. Gilbertson, president of the Swansea metal exchange recently stated that the haulage of steel bars 100 miles in Great Britain involved a charge five times as high as in Belgium. Ebbw Vale paid during its

last financial year in taxes £142,922 ($693,170) and £68,281 ($311,160) for national insurance. Including the payments on the miners' betterment fund and the supply of workmen's coal at below cost, these charges in all amounted to £298,479 ($1,467,600) sufficient to pay the preference dividend and 8 per cent on the ordinary shares. This company paid £493,636 ($2,394,000) to the railway companies for carriage of various commodities.

Forecasts are unusually difficult. It seems inevitable that further price reduction must follow in the present keen competition. In this respect the steel trade has been more unfortunate than other industries. The price index number of the board of trade for September shows iron and steel prices as 21 per cent above prewar whereas "all commodities" were 56 per cent above prewar. This severe pinching of prices makes any prospect of profitmaking recede further since as will be seen from import figures, foreign competition is still effective.

Pig Iron Situation Better

The recent spurt in pig iron buying has so far entirely failed to lift selling prices, although, on the whole, the pig iron industry is more favorably situated than steelmakers. One of the few forecasts in regard to the new year which it would appear safe to make is the somewhat dismal prognostication that prices are much more likely to recede than advance. The principal competitors on the Continent still have the selling advantage of low exchange currencies, while in the matter of buying from this country the same circumstance places them somewhat at a disadvantage, a matter which is proving considerable importance to the tin plate trade.

There should be a good demand for structural steel in the new year, in view of the activity of building, and the large quantity of repair work undertaken by railways with fair programs for reconstruction. The Locarno settlement, while producing a better feeling between the nations and thereby creating a more favorable commercial atmosphere, is likely to reduce the number of warships required either from government or shipbuilding yards. The Staffordshire iron trade calls for little remark. Prices have tended downward, and a considerable number of ironworks have been dismantled. The increasing preference for steel for a variety of purposes on account of its lower price is likely to extend.

Penalties Are Reduced

At the end of November a general meeting of tin plate manufacturers of South Wales approved by a majority a scheme for the regulation of output on the pooling system. They decided, however, to postpone indefinitely its adoption, although the proposal was originally to bring it into operation at the beginning of 1926.

It will therefore be kept as a measure in reserve to be applied in a period of declining trade. The penalty for overproduction will be 1s (24c) per box and the payment from the pool for underproduction 9d (18c) per box.

One of the objections which held back general approval for some time was that the figures originally proposed were 2s 6d (60c) for overproduction and 1s (24c) for underproduction.

As the outlook in the tin plate trade is hopeful with large production, the starting of this piece of output regulating machinery may be postponed for some time until a greater exigency shall arise.

British Exports in Gross Tons During 1925

Commodity	January	February	March	April	May	June	July	August	September	October
Scrap	12,124	13,938	6,559	3,568	13,343	11,657	6,521	7,461	4,670	9,485
Pig Iron:										
Forge and foundry	30,832	30,810	26,554	20,034	21,630	18,587	23,836	14,721	14,423	36,324
Acid	13,716	9,586	12,540	18,277	16,132	14,123	9,610	12,136	12,601	14,108
Basic	.....	53	29	5	32	25	30	.....	10	2
Ferroalloys	12,948	12,376	13,552	8,029	9,509	8,859	3,900	4,403	4,318	3,422
Steel ingots	41	85	119	395	76	189	181	65	25	63
Blooms, billets, slabs	294	396	377	156	755	270	398	575	421	399
Bars, rods, angles, shapes, etc.	22,722	25,402	23,257	23,129	26,654	21,766	23,135	20,540	18,690	24,551
Castings, iron	91	156	106	69	86	246	118	198	50	311
Castings, steel	58	21	40	44	49	66	156	40	83	132
Forgings, iron	8	26	8	51	9	5	14	28	30	35
Steel girders, beams, etc.	4,375	4,088	5,969	4,153	6,081	4,255	5,208	4,664	4,731	9,508
Hoops and strips	3,177	4,942	4,755	4,928	5,585	5,308	4,845	5,985	5,426	5,192
Plates and sheets, not gal.:										
Armor plates	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plates and sheets not under ¼" thick	9,737	9,849	11,505	10,033	11,991	10,333	7,820	10,120	9,059	11,936
Plates and black sheets under ¼" thick	21,524	13,751	9,842	9,244	12,945	13,229	18,431	20,066	19,155	18,530
Black plates	2,370	1,537	2,442	2,370	2,999	3,572	4,625	3,068	2,567	3,117
Plates and sheets, coated:										
Galvanized sheets	56,903	64,350	65,351	63,319	60,404	51,860	58,282	51,422	51,310	66,572
Tin plate	43,860	30,977	45,298	35,268	42,705	39,837	46,837	39,827	41,137	55,767
Cast tubes, pipes and fittings	6,560	8,058	7,622	11,120	7,966	8,496	7,721	7,462	6,758	7,513
Wrought tubes, pipes and fittings	16,586	17,581	12,255	11,171	19,188	13,487	14,840	19,028	13,271	20,572
Rails for trams	682	601	362	431	664	494	335	1,751	1,753	1,198
Railway rails	24,566	12,989	12,540	13,144	27,556	13,158	19,083	19,297	2,273	18,373
Sleepers and fishplates	1,939	2,533	7,257	8,744	5,114	6,962	10,054	8,267	10,520	14,869
Tires and axles	1,580	1,548	1,439	1,145	1,370	1,391	1,095	1,291	1,300	2,105
Wheels and axles	2.033	2,176	1,818	1,851	1,068	1,945	2,555	2,077	1,922	1,866
Railway material, other types	7,896	5,717	8,084	6,743	2,755	3,447	3,910	4,613	4,223	9,051
Wire	6,434	7,374	6,795	7,683	5,827	5,308	5,809	5,184	6,103	6,639
Wire manufactures	3,875	3,728	4,637	4,390	4,318	3,165	3,407	3,095	3,337	3,933
Nails and tacks	1,577	1,479	1,244	1,292	1,709	1,403	1,769	1,481	1,289	1,466
Wood screws	287	354	337	197	238	294	279	271	337	415
Bolts and nuts	2,778	2,896	2,350	2,596	2,705	2,277	2,895	2,794	2,639	3,202
Manufacturers of cast iron	1,471	1,702	1,462	1,433	1,630	1,457	1,438	1,544	1,487	1,850
Anchors, cables and chains	1,425	1,502	1,509	1,311	1,256	1,125	1,143	904	1,303	1,184
Bedsteads and finished parts	1,130	824	1,197	887	1,313	1,187	1,047	971	856	1,258
Hollow ware	1,694	1,629	1,858	1,639	1,486	1,640	1,598	1,585	1,853	1,925
Other manufactures of iron and steel	18,758	22,860	16,241	15,749	17,242	14,776	19,172	17,342	16,971	20,127
Total, including scrap	337,475	341,511	318,753	301,027	335,483	287,309	313,136	295,250	277,907	378,308

Belgian Steelmakers Confident

Six Month Strike Impaired Metallurgical Industries—Iron and Steel Production Practically Maintained—Belgian Exporters Preparing to Capture Markets—Advance in Tube Manufacture

European Staff Special

CONDITIONS in Belgium during the first half of 1925 were favorable to the iron and steel industry. Results obtained during the second half were not quite as satisfactory, due to labor troubles which developed in June. Strikes resulted when operators attempted to lower wage scales. However, Belgian industrialists are hopeful and are entering 1926 well prepared to meet competition in world markets. The fact that they have funded their debt to the United States will, it is believed, serve to stabilize exchange. Moreover, wages have not been increased in Belgium as much as in neighboring European countries and living costs are comparatively low when considered on a gold basis. It is true that German manufacturers are making great efforts to regain lost export markets and Belgium will meet keen competition from this direction, but if present prices and ability to deliver are any indication Belgium should be able to hold her own not only against Germany but France and England as well.

Pig iron production during the first ten months of 1925 was 2,211,190 metric tons, compared with 2,344,860 tons produced during the corresponding period of 1924, a decrease of 5 per cent. Production of steel ingots and castings during the first ten months of 1925 amounted to 2,099,120 tons, which is approximately 12 per cent less than last year. Of this total 55,270 tons were steel castings and the remainder ingots.

It is of interest to note that Belgium and Luxemburg imported 219,260 tons of pig iron during the first ten months of 1925. Of this tonnage France supplied 102,210 tons, Germany and England about 47,000 tons each and the rest came from other countries. Belgium during this period exported 72,657 tons of pig iron, over half of which went to Great Britain. Imports of iron and steel products during the first eight months of 1925 were 314,853 tons, while exports during the same period attained 2,120,000 tons. Shipments of Belgian and Luxemburg iron and steel products to the United States during this period were about 96,000 tons.

Labor troubles, referred to previously, were avoided with much difficulty during the early months of 1925, but strikes were finally declared in June. Late in 1924 workmen were asking for more pay just when employers had practically decided to reduce wages. A mixed commission was elected by the labor unions and steelmakers to arbitrate these differences which were finally settled by allowing wages to remain unchanged until March 15, 1925. Early in March steel manufacturers proposed to renew their contracts with the unions and reduce wages 10 per cent, to become effective April 1. This adjustment was opposed by labor and the men at the Sambre-et-Moselle and Beaume and Marchienne mills notified their employers of their intention to declare a general strike April 15. Industries in the Hainaut district united and responded to this threat by menacing the men with a lockout. Workmen in the Liege district accepted the proposition of the employers to reduce wages 5 per cent April 1 and 5 per cent May 1. The conflict was soon resumed, however, as late in May delegates of the labor unions declared that in order to properly judge the wage problem they must have access to the books of steel manufacturers. Employers were prompt in rejecting this proposal with the result that the men at Sambre-et-Moselle and Providence (Marchienne-au-Pont) who had threatened to strike April 15 declared a general strike. Employers replied by declaring a lockout for all mills in the Charleroi district and notified the men that work would be resumed provided they accept a 5 per cent reduction and give their accord to this offer before June 8. Refusal of this proposition by the labor parties brought the minister of public works to intervene, but to no avail. Thus industry in the Charleroi basin was paralyzed. The strike was confined to this district, except for the strike which occurred July 1 among the structural iron and steel workers. The number of strikers at this time was estimated to be 75,000. Construction men resumed work Aug. 31.

Belgian Production

METRIC TONS

Monthly average	Coke	Pig iron	Steel ingots and castings	Finished steel
1913	293,585	207,055	205,550	154,820
1921	116,885	72,670	63,680	69,755
1922	237,490	134,430	130,430	112,215
1923	348,330	178,995	191,410	161,950
1924	346,650	234,000	238,380	198,115
1925				
Jan.	369,400	249,350	246,160	212,870
Feb.	342,480	245,600	239,660	199,310
March	385,570	281,560	268,550	219,910
April	373,310	267,850	250,990	207,860
May	373,000	274,800	252,720	201,490
June	330,710	212,700	196,710	152,240
July	306,420	168,480	155,140	128,150
Aug.	308,970	166,800	150,300	121,120
Sept.	303,280	170,280	164,580	134,010
Oct.	332,070	174,270	171,310	143,450

The general revival in business conditions which began to make itself felt toward the end of 1924 continued throughout January, 1925. Mills were booked several months in advance, especially rail mills, several of which were committed as far as six months. Prices were, therefore, easily maintained during January and February. About the middle of February buying slowed down due to the crisis in the building trades and exchange fluctuations. Price reductions were small, however, and concessions were made only by the smaller operators. Early in May export prices were reduced to meet foreign competition, but the downward movement was checked late in the month by threatening strikes. Late in June the price situation was troubled by the sudden depreciation of the franc. The general trend of domestic prices in Belgian francs has been upward throughout the year, while export prices, which are generally quoted in pounds sterling, have been declining slowly.

Belgium and Luxemburg imported 6,737,804 tons of iron ore during the first nine months of 1925, of which 6,221,299 tons came from French mines. Imports of manganese ore were 166,780 tons, of which 109,838 tons came from India and 37,202 tons from Russia. The average price paid per ton for manganese ore was 242.34 francs ($10).

Belgian mines produced 19,318,470 tons of coal during the first half of 1925, or about 6 per cent less than the output during the corresponding period of 1924. Reduction of output

(*Concluded on Page* 113)

French Steel Exports Gain

Depreciation of Franc Turns to Advantage of France—Future Darkened by Financial Tangle—Pig Iron Production Nearing Maximum —Active Trade Relations with America

By L. W. Moore
French Correspondent, Iron Trade Review

FRANCE is gradually increasing her output of iron and steel products. According to surveys made by a committee of experts shortly after the armistice, if operated to capacity, French blast furnaces can produce in the neighborhood of 10,000,000 tons of pig iron annually. Statistics covering the past few years show that she is gradually attaining the maximum.

In view of the political and financial crisis under which France is laboring it is difficult to forecast the future of the French iron and steel industry. When M. Caillaux was handed the portfolio of minister of finance many predicted that he would extricate France from her financial difficulties, and industrial interests were watching his movements with unusual interest. His ability as a financier has never been questioned, but his failure to fund the American debt led eventually to his downfall as well as that of the government which he represented. Drastic measures must be taken soon to meet the interest charges on internal loans as well as short-term government bonds. Whichever means is resorted to, either further inflation or a capital levy, French industries will be put to serious contribution. Even previous to the acute state reached by French finances, industrial concerns were heavily taxed as shown by the returns of the Acieries de Longwy, one of France's largest iron and steel concerns, for the fiscal year ending April 30, 1925. It was disclosed that 74,000,000 francs ($3,000,000) was expended on wages and 13,000,000 francs ($550,000) on taxes, while only 8,000,000 francs ($325,000) was available for distribution among stockholders. This year the burden must necessarily be even greater. As a result, business is suffering from an increasing lack of confidence. France has not yet gone through the period of deflation which the United States, Great Britain and several other countries have successfully accomplished. In the event of the franc being stabilized, the French businessmen fear the industrial depression and consequent unemployment which usually accompany deflation. On the other hand, should the franc continue to deteriorate, the example of Germany is sufficient to justify grave anxiety. Just how France will succeed in turning the corner remains to be seen, but the feat will prove a trying period for the metallurgical industry.

During the first ten months of 1925 French blast furnaces produced 6,983,657 metric tons of pig iron, of which 37,446 tons was made in electric furnaces. This is an increase of 10 per cent over the output for the corresponding period of 1924. This corresponds to 90 per cent of the production of all blast furnaces included in the same territory in 1913. The number of furnaces blowing at the beginning of the year was 133. Due to a constantly increasing demand additional furnaces were blown in until 143 were blowing Nov. 1, 1925. The capacity per furnace per day was increased from 165.2 tons in 1924 to 171.6 tons in 1925. The best showing was made by the furnaces in the east of France where production was increased 11 per cent, and in Lorraine where the output was increased by 9.5 per cent. Production in the Center district was maintained at the same rate as last year. The southern and western districts produced 35,000 tons less iron than last year. The combined output of eastern and Lorraine blast furnaces during the first semester of 1925 amounted to 3,288,000 tons, or 80.4 per cent of France's total output. Approximately 88.4 per cent of the total output was phosphorus pig iron. An average of 22,000 men daily were employed by blast furnace operators. The production of steel ingots and castings during the first ten months totaled 6,109,472 tons. This represents an average monthly output of 610,947 tons, or an increase of approximately 6 per cent over the 1924 figures.

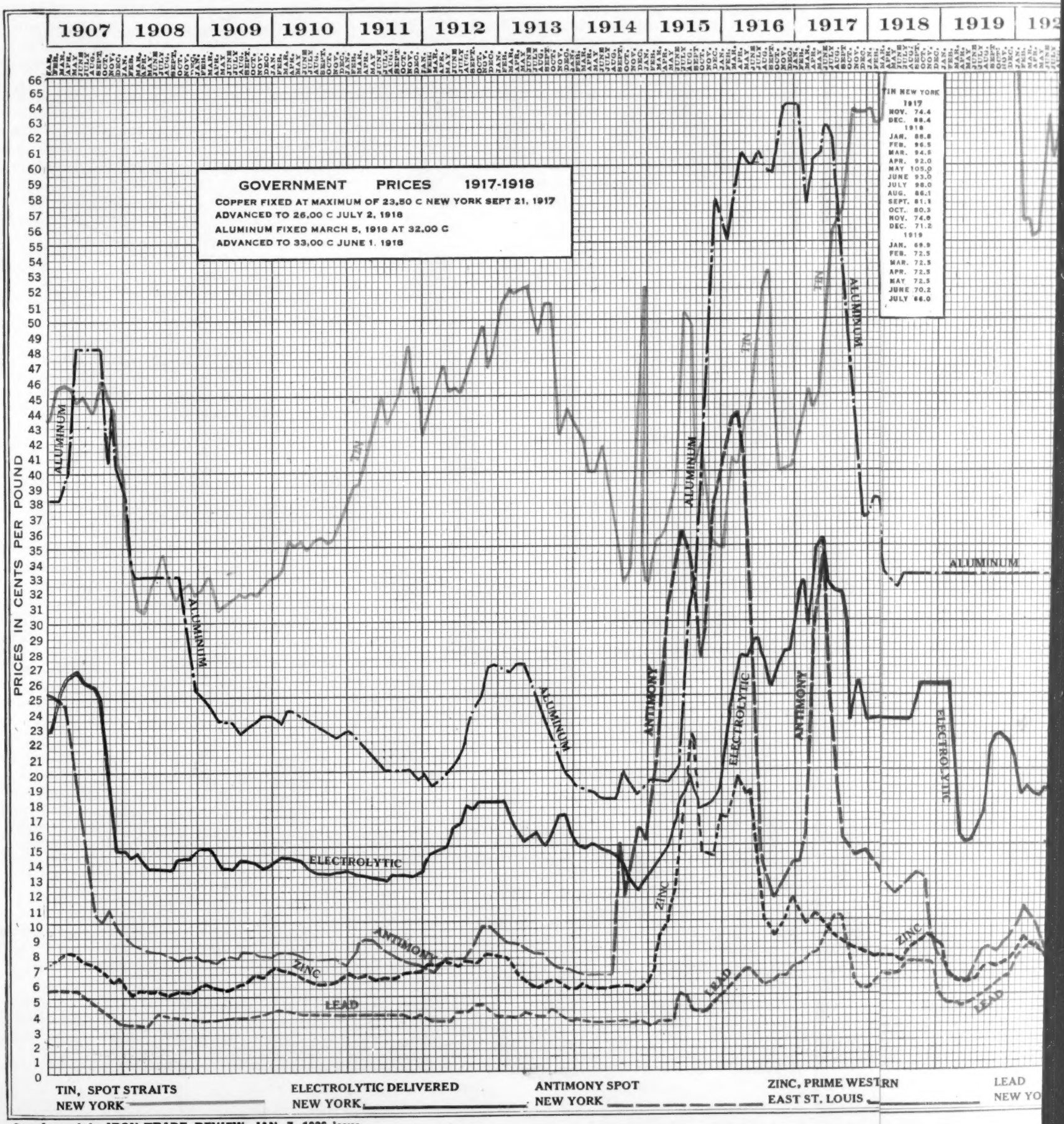
France enjoyed a comparatively quiet year from the point of view of labor. Only a few short strikes took place in certain districts, especially in the Paris center and in the Loire region. There is practcally no unemployment in the French metallurgical industries. In fact there is a shortage of labor and a large proportion of foreign workers are employed. However, in view of the marked increase in the cost of living which has prevailed since the latter part of last year it is to be expected that claims for higher wages will be pressed before the new year is well advanced.

French mines supplied 10,823,652 tons of the iron ore used in France during the first half of the present year. This tonnage was supplemented by imports of 338,553 tons, of which Luxemburg supplied 163,893 tons. The remainder came from Spain, Sweden and French colonies. The production of iron ore in France during the first eight months of 1925 totaled 24,046,671 tons, or an average of 3,005,834 tons monthly, compared with a monthly average output of 2,416,020 tons during 1924. French coke ovens produced 2,234,116 tons of coke during the first nine months of 1925, an average monthly production of 248,235 tons, compared with a monthly average of 220,765 tons during 1924. This does not include the coke manufactured by self-contained iron and steel plants. During this period imports of coke totaled 3,828,148 tons, most of which came from Germany. Exports amounted to 321,142 tons up to Sept. 1, 1925. The supply of German reparations coke, which was plentiful all through the year, continues to be controlled by the French government which fixes the price at which the coke is sold to the furnaces. This price remained constant at 145 francs (about $6.50 at an average rate of exchange), per metric ton. Negotiations between representatives of the French furnace operators and of the German cokeries are being pursued with the object of exchanging coke on a free market.

France's trade balance, as far as iron and steel products are concerned, continues to improve. Only 23,164 tons of pig iron were imported during the first nine months of 1925. This is one-third less than 1924 imports during the same period. Imports of steel products averaged 56,780 tons monthly during 1924, compared with 11,919 tons monthly during the first nine months of 1925, or a

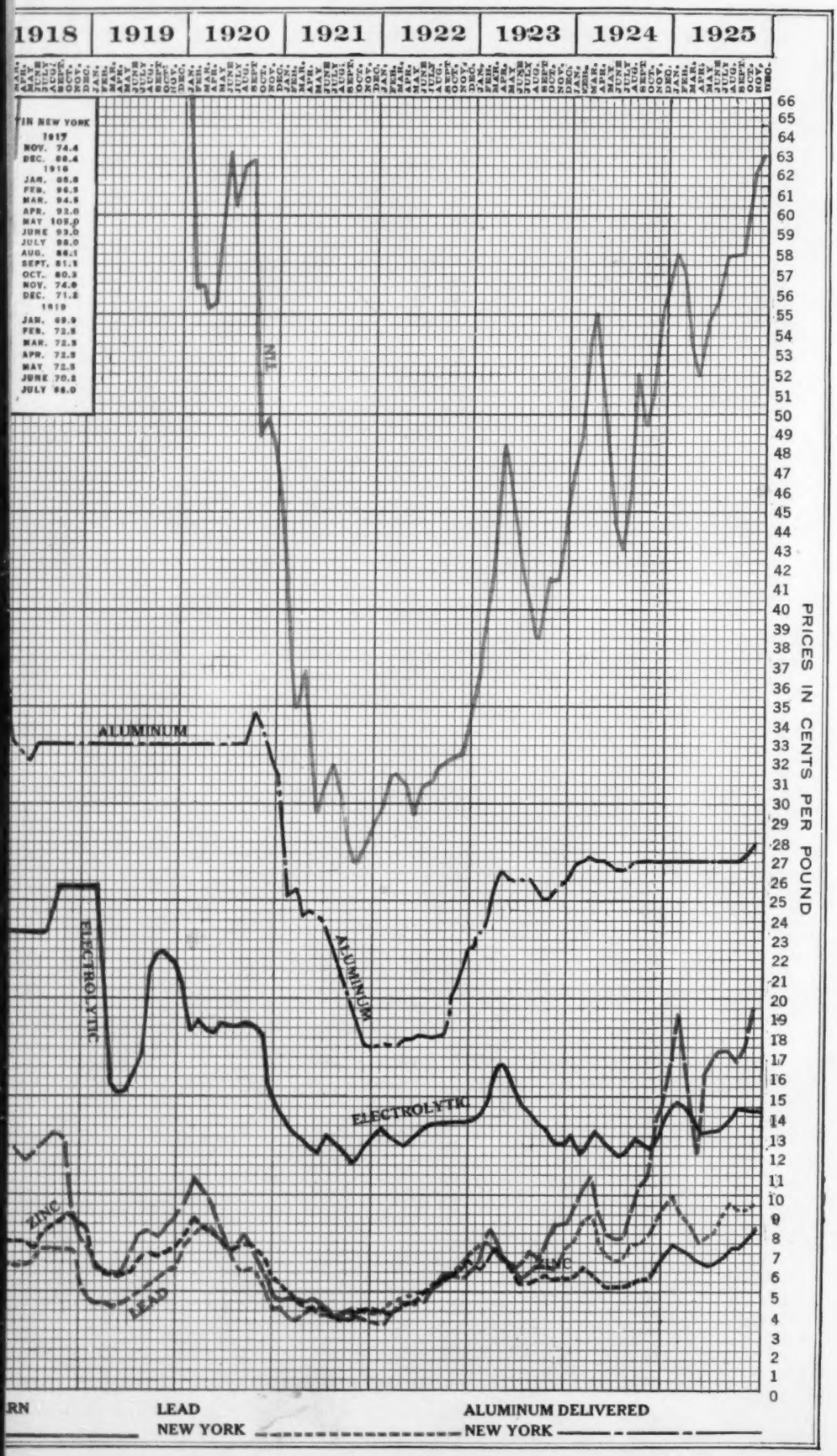
IRON TRADE REVIEW

Fluctuations in prices of pig tin, aluminum, antimony, electrolytic copper



ADE

rolytic copper, zinc and lead, 1907-1925



decrease of 75 per cent. Exports of pig iron up to Nov. 1, 1925, totaled 552,000 tons, an average of 55,200 tons monthly, compared with a monthly average of 63,900 tons during 1924. The showing on steel, however, is much better. During the first nine months of 1925 France exported 2,407,127 tons of steel, which is an increase of 45 per cent over 1924 figures for the same period. The importance of export business to the French iron and steel industry is best shown by the fact that up to Sept. 1, 1925, her exports of pig iron amounted to 8 per cent of the total output, and exports of steel were equivalent to 45 per cent of all tonnage produced. It should be noted that import and export figures shown on Table I include only pig iron, semifinished steel, rolled steel and scrap, as usually published in France. A more complete idea of the importance of French exports is given by table II, showing exports by commodities. It should also be remembered that since Jan. 10, 1925, the Saar is included in France's customs boundaries and its exports and imports are included in the French returns.

Domestic prices of iron and steel products remained fairly steady throughout the year. This was accomplished by the organization early in March of a selling syndicate known as the Office des Statistiques des Produits Metallurgiques, or statistical bureau of metallurgical products. This bureau at its debut confined its scope to pig iron, but later manufacturers of semifinished and finished steel products joined the organization. This new group operates in much the same manner as the Comptoir Siderurgique which three years ago was the selling agency of the leading steelworks. Foreign competition has not been felt to any extent in France, due to high protective tariffs on iron and steel products. Domestic business has been satisfactory as French industry in general has been active through the year. Prices are somewhat more remunerative on domestic business, due to the absence of serious foreign competition. French export prices are generally quoted in sterling and a large volume of transactions is effected on the Brussels exchange. At the close of last year the rapid drop of the French franc gave France the position of governing export quotations and capturing business at low sterling prices, although these were higher than domestic quotations. Attempts were made several times during the year to organize European steel producers with a view to distributing export markets. Negotiations have been temporarily suspended due to the failure of France and Germany to reach an agreement.

Export business has been satisfactory. In this France has been aided by the low value of the franc. French pig iron was selling in the United States early in the year, but the drop in American prices which began in April checked exports in this direction. However, at the end of the year a few more sales were effected. Pont-a-Mousson, the leading manufacturer of cast iron pipe in France, was successful in selling a large tonnage of cast iron pipe in the United States. Their agent in New York, B. Nicoll & Co. competed on most of the important jobs along the Atlantic Coast as well as the Pacific. French competition on this product was felt by American manufacturers as far into the interior as Detroit.

Seamless steel tubing is another product which French manufacturers have been marketing successfully in the United States. A group of Americans have organized a company under the name of American Seamless Tube Corp. This company is reported to have entered into contracts with manufacturers of seamless steel casing in France and Germany for the supply of a large tonnage of casing which they will sell to oil companies in America.

European casing has proved satisfactory in the Californian oil fields and other localities where deep drilling is necessary. French manufacturers have exported pipe to numerous other markets, particularly Spain, the French colonies and South America.

The several exporting houses which were organized in France soon after the armistice continue to handle practically all foreign business in the iron and steel industry. These are Longovica, Nortrilor, Sogeco and Columeta.

The Nortrilor group includes such interests as the Societe des Forges et Acieries du Nord et de l'Est, Usines Metallurgiques de la Basse-Loire, Societe des Forges et Acieries de Nord et Lorraine and the Neunkircher Eisenwerk in the Saar. They have an agent in New York and have been enjoying a good export business with the United States.

France is not only making headway in exports of iron and steel but many other manufactured products as well. In fact, statistics covering the first ten months of 1925 show the exports exceeded imports by 2,631,037,000 francs ($105,241,000).

Table II

French Iron and Steel Exports

Commodity	1925 (January to September)	1924 (January to September)	1923 (January to September)
	—METRIC TONS—		
Scrap	448,122	308,816	410,181
Pig iron	503,000	549,933	436,127
Ferro-alloys	3,315	14,435	15,928
Ingots	9,392	6,495	8,684
Semifinished steel, bars and shapes	1,498,669	978,887	599,862
Special and tool steel	1,161	1,066	2,532
Wire rods	73,930	63,005	30,098
Bands, hoops and cold rolled steel	24,208	8,894	13,109
Plates and sheets	112,706	46,119	30,384
Flats	7,216	1,711	543
Tin, terne and coppered plates	8,583	3,736	2,976
Wire products	41,002	22,457	23,856
Rails	172,659	219,885	175,449
Railroad tires and wheels	4,340	2,917	2,040
Axles	2,127	2,543	2,487
Constructional steelwork	90,175	50,061	112,978
Wire nails	5,613	10,269	5,111
Cast iron pipe	150,176	82,004	43,918
Other castings	7,071	5,371	3,946
Steel tubes	52,090	14,389	12,982
TOTAL	3,215,555	2,392,993	1,933,191

Belgian Steelmakers Are Confident of Future

(*Concluded from Page* 111)

was caused by depressed market conditions and strikes.

Butt-welded and seamless steel pipe manufacturers have been operating to full capacity throughout the year. Belgian pipe is competitive on nearly all foreign markets. Orders have exceeded the capacity of the mills and deliveries have been extended.

A new tube mill is now under construction at Jemappes, Belgium, and the manufacture of butt-welded pipe will commence in April, 1926. The new concern is known as the Usine a Tube de Jemappes. Later on a lap-welding mill will be installed and lap-welded pipe up to 12 inches will be manufactured. The Laminoirs de Jemappes is interested financially in the new concern and will supply the skelp.

German Industry Needs Capital

Steel Output Growing but Strictly Controlled— Prices Unremunerative—Large Westphalian Trust Is Being Organized—French Keenly Competing—Greater Volume of Imports

By Dr. E. H. Regensburger
German Correspondent, Iron Trade Review

DURING 1925 the progress of the German iron and steel industries was checked by shortage of capital. The purchasing power of domestic buyers decreased, while merchants and producers found it difficult to finance export business.

At the end of the year a brighter outlook prevailed following the adjustment of political difficulties. When foreign credit is available, Germany's productive capacity and her highly organized control of production and prices should bring about a revival of business at home and exchanges with foreign countries. German exports last year were about 50 per cent of the prewar rate. This was due to her reduced territory, to the high cost of production and to the fact that an increasing number of foreign countries have protected their own industries by high custom tariffs. On the other hand, during and since the war German producers have heavily enlarged the capacity of their plants. During the first six months of 1925 the output of German pig iron was equal to that of 1913 in the present boundaries, while the steel output even exceeded prewar figures. This contrast between the enlarged capacity, the shortage of capital to make use of it, and the reduced domestic and foreign demand was the principal reason for the unsatisfactory condition of the German iron and steel markets in 1925.

The growing competition between individual producers brought about an increasing tendency to control production and prices. Following the establishment of the German raw steel union at the end of 1924 numerous subsidiary syndicates were formed for allotment of orders and fixing of prices. They cover most classes of semi-finished and rolled products and include the majority of the works producing these commodities. These syndicates sell only to merchants who are pledged to handle the steel at fixed prices plus a given profit. Since many traders still had stocks on hand which they had previously bought at cheap prices they were able to underquote the official prices of the syndicates, but when these stocks are exhausted only foreign material will be available at a cheaper price. Furthermore, there is an import duty on foreign steel.

The purpose of the German raw steel union, which is the mother-union of all these syndicates, is to adapt the output of German steel works to the demand. For each of the 34 German works a maximum annual output is fixed which totals 14,721,772 metric tons. Owing to decreasing sales the raw steel union gradually cut down the output. From 10 per cent in January the restriction reached 35 per cent in August and was maintained at this rate until the end of the year. The output of semi-finished goods during the first months was not curtailed, and only in the last months it was reduced in the same ratio as that of other products.

Table I

German Iron and Steel Production

Metric Tons 000 Omitted

	No. Fur. in blast	Pig iron	Steel ingots castings	Rolled products
Mo. av. 1913	204	910	981	970
Mo. av. 1922	158	766	934	861
Mo. av. 1923	145	411	525	457
Mo. av. 1924	106	651	820	681
1925				
January	113	910	1,181	982
February	120	873	1,155	925
March	122	991	1,209	1,003
April	119	896	1,064	911
May	120	961	1,115	916
June	119	941	1,109	896
July	108	886	1,031	863
August	101	766	900	803
September	96	735	880	777
October	93	742	928	773

Figures for 1913 are for Germany in her present boundaries.

German iron and steel production in 1925 exceeded not only the output of the two preceding years, which were hampered by the Ruhr occupation and by the stabilization of the mark, but also that of 1922. The steel output even exceeded the 1913 output in the present territory. The 1925 production of steel ingots and castings is estimated at 12,400,000 metric tons, as against 9,835,255 tons in 1924 and 11,768,400 tons in 1913 in the present territory. The pig iron output for the past year is estimated at 10,100,000 tons, as compared with 7,812,231 tons in 1924 and 10,915,700 tons in 1913. The highest mark was reached in March and since then production has continuously decreased, as shown by table I. Of the rolled products, the output of bands, wire rods, tinplates and pipe exceeded the prewar rate.

In the coal mines the output was reduced by about 60 per cent in July and a considerable number of miners worked on part time or were dismissed. However, stocks of coal in the Ruhr district accumulated to about 9,400,000 tons at the end of June. In October these stocks were reduced to 6,570,000 tons as the average daily output had been restricted from 378,614 tons in January to 339,634 tons in October, and the number of miners had been reduced from 472,605 to 401,815, as compared with 427,400 at the eve of the war. From 30,000 to 40,000 tons of coal were sold to America last fall. The Rhenanian-Westphalian coal syndicate was prolonged until March, 1930. The ore market was active during the first six months, but slackened in the second half of the year. As imports of iron ores during the first nine months totaled 9,522,527 tons, while exports amounted to 138,744 tons, stocks at the works were heavy. Of these imports, 60 per cent came from Sweden, 10 per cent from France, 12 per cent from Spain and about 1 per cent were Canadian Wabana ores. In July the Rawack & Grunfeld Co. signed a contract concerning the delivery of iron ores and manganese ores with the South Russian ore trust (Just) and 21,000,000 poods were sold to Germany under this contract.

During the first quarter of last year domestic business was active and prices strengthened as consumers anticipated a further rise resulting from the establishment of the selling syndicates. But owing to the embargo on foreign products, which was enforced Jan. 10, 1925, about 200,000 tons of Lorraine and Saar material had been imported in advance. This material was thrown on the market

and consumers covered their requirements with cheap foreign steel, so that during the following months prices weakened. As the shortage of money made itself felt and as export sales declined, competition on the domestic market became keener. The financial situation of the works grew worse and in May the beginning of the crisis appeared and further increased during the summer months.

Prices were nominally maintained at the same level while consumers became more and more reluctant to buy. This period was characterized by the collapse of the Stinnes combine, which in later months was followed by financial difficulties with the combines of Stum, Rombach, Giesche and Sichel. Plants were shut down and wage earners dismissed, but those works which continued operating at a reduced rate claimed that they were doing so at a loss. Whereas in 1914 the cost of production of bars was 84.84 marks ($20.20) per metric ton compared with a selling price of 95.25 marks ($23.65), in December, 1924, the cost was 134.26 marks ($32) and the selling price 116.34 marks ($27.85), taxes and depreciation not being included. Since then conditions have become worse. This brought about an increasing tendency to form syndicates in order to reduce overhead expenses and specialize production.

Producers Form Combine

The movement spread to Upper Silesia where conditions also were bad. At the end of last year the six western producers, Thyssen, Phoenix, Deutsch-Luxemburg, Bochumer Verein, Gelsenkirchen, Rheinstahl, which altogether have an annual capacity for raw steel of about 5,000,000 tons, and for coal of about 40,000,000 tons, agreed to combine their interests and form the United Steelworks Co., but the organization was retarded by difficulties relating to the formidable taxation incurred in the formation of the new company. This combine intends to consolidate their debts by securing new foreign loans; the floating debt of Thyssen alone aggregates about 90,000,000 marks ($21,500,000).

German export business in 1925 was almost 100 per cent in excess of the 1924 figures, but these only partly accounted for the exports of the occupied district of the Ruhr. Many of Germany's old customers have established steel industries of their own, while the German territory has been reduced and German exporters lacked sufficient capital to grant credits to their customers in the same way as did their competitors. France, Belgium, Luxemburg and the Saar captured most of the export business which previously had been enjoyed by Germany. In order to help the export trade the German gold discount bank resumed its activities in May, and in November a scheme for the formation of a new institution for this purpose was established. It is anticipated that this action will lead to greater activities in foreign markets. Exports reached their highest mark in March and then declined until June. Since that time a slow increase was maintained up to September. The year 1925 showed an export surplus in tonnage for the German iron and steel trade. During the first nine months exports were 2,502,542 metric tons, imports were 1,189,919 tons, the export surplus being 1,312,623 tons as against 294,591 tons in the corresponding period of 1924 and 5,891,977 tons in 1913. During the year an increasing number of the old export houses closed as producers followed more and more the policy of handling their own export sales. Table II shows the composition of iron and steel exports for the first nine months of 1926, 1924 and 1922.

Increases were noted especially for bars and structural shapes, owing to larger shipments to Holland and Great Britain; rails, due to increased exports to all countries, but especially Brazil, Holland, Sweden and India; plates, mainly to Holland and the United Kingdom; pipes, especially to the Argentine Republic and Holland; wire products, chiefly to the United Kingdom, Brazil and the Argentine Republic. Pig iron exports also increased. There was a decrease in the exports of scrap which were hampered by an embargo; wire nails, due especially to smaller shipments to China, and thin sheets, resulting from reduced sales to Denmark and Austria. The main countries of destination for German iron and steel in 1925 were Holland, the United Kingdom, the Argentine Republic, Italy, Brazil and India.

In October an agreement was signed between the German and Belgain producers of wire rods in order not to compete in their respective territories. As German export prices for the main part of the year were above the world market level, makers of finished articles could hardly compete abroad. In order to render these exports possible the raw steel union granted export bounties to manufacturers since the middle of the year. These bounties were increased according to the growing difference between domestic and foreign prices.

Imports were considerably larger in volume than in 1924 and more than twice those of 1913. The principal increase of imports last year resulted from heavier arrivals from Luxemburg, France and the Saar which, owing to the depreciation of the franc, were even in a position to surmount the German custom tariff effective since Jan. 10, 1925. Due to the heavy buying previous to the establishment of the customs tariff, January imports were the maximum for the year 1925, while both the following months recorded the minimum figures. Imports of semifinished goods increased from 85,037 metric tons during the first nine months of 1924 to 164,899

(*Concluded on Page* 118)

Table II

German Iron and Steel Exports

Commodity	——METRIC TONS—— 1925 (January to September)	1924	1922
Scrap	193,475	272,380	98,467
Pig iron	126,878	34,910	110,411
Ferro-alloys	23,157	4,167	6,085
Semifinished products	59,273	6,822	54,621
Bars and structural shapes	376,957	126,413	512,313
Rails	239,219	8,922	210,052
Plate	244,484	65,003	117,607
Medium sheets	37,081	32,623	33,996
Thin sheets	17,426	18,934	22,254
Pipe	222,508	60,154	185,061
Wire (including wire rods and Galvanized wire)	220,419	96,291	173,512
Barbed wire	46,798	22,888	27,197
Wire nails	40,069	55,108	67,448
Railroad material (permanent way)	90,907	1,604	41,882
Railroad axles and wheels	60,307	10,271	39,706
Tools and implements	26,245	20,077	43,047
Agricultural implements	36,715	24,490	37,234
Stove castings	25,452	21,299	30,029
Total, including items not specified above	2,502,542	1,147,053	1,889,116

1924 figures contain only part of the exports from the occupied area.

Congress More Favorable to Business

(Continued from Page 36)

something more than $300,000,000 in tax receipts. Debate in the senate is taking the form of how this cut shall be apportioned among large and small taxpayers, and as to continued publicity for tax returns. No division has existed in the house in regard to relieving the taxpayer of a decidedly substantial part of his burden; also no division exists in the popular demand that congress make good on its tax measure promises honestly and promptly.

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"YOUNG BOB"

Whose First Few Weeks in the Senate Show Him Displaying Marked Characteristics of the Late Elder LaFollette

Tax Changes Effective Jan. 1

Under the terms of the tax bill, it is to take effect on the day of its enactment, which may be March 1 or March 15, except as otherwise provided. The changes in income tax rates are effective as of Jan. 1, 1925, which means that the reduced rates will apply on incomes of the calendar year 1925, for which returns will be filed on March 15, next. The gift tax is repealed as of Jan. 1, 1926 but reductions in estate tax rates become effective on the date of the passage of the act, returns on estates not being on a calendar year basis. Many excise taxes are repealed to take effect on the enactment of the law. The reduction of the tax on passenger automobiles from 5 to 3 per cent, however, becomes effective after 30 days, and the same is true of the stamp taxes on deeds and conveyances. Repeal of various occupational taxes, including that of the user's tax on power boats and yachts, becomes effective on June 30, next.

Legislation to stimulate voluntary consolidations of the roads is the principal railroad issue before congress. The interstate commerce commission has done most of the necessary work preliminary to setting up its permanent program of ideal railroad consolidations as a guide for the roads to follow in arranging their negotiations. Congress may provide the machinery by which railroad managements might go ahead on consolidations, subject to approval of the interstate commerce commission, on their own ideas.

The Gooding long-and-short-haul bill again will be stirred up but its passage is unlikely. Possibly a Mountain States bloc will be behind it, offering to bargain with other sectional blocs on other issues before congress.

Discussion about repealing the Hoch-Smith act, adopted last year, under which the interstate commerce commission has been making a laborious general study of the rate structure of the entire country, ostensibly to ascertain whether agricultural rates are too high, again has been revived, but it is not likely that the farm sympathizers in the senate will assent to this. With the Hoch-Smith investigation has been combined the application of western roads for 5 per cent increase in rates, and a similar combination likely will be sought in the eastern class rate investigation, as well as in the southern class rate case, if the latter case is reopened. The southern case has proposed to revise the antiquated "basing point" rate structure of the southern territory on the mileage scale basis but the basis laid down has been opposed hotly by both carriers and shippers.

Consider Mileage Scale

A tendency has been shown toward the setting up of mileage scale rates in proposed readjustments of iron and steel rates. Such a scale was set up as a basis for rates to be worked out by the carriers in the Jones & Laughlin rate case, involving rates from the Pittsburgh district west of St. Louis and beyond but this adjustment has been under attack. Many rate adjustments affecting iron and steel undoubtedly will be sought in the coming year. The rate situation is fraught with new interest since the Pittsburgh plus decision of the federal trade commission and the increase of water-borne traffic on a part of the Mississippi system, the Mississippi-Warrior and other services.

It is believed little or no tariff tinkering will be done by congress. A number of industries, however, have been planning quietly to have special bills presented to raise the rates affecting them. The only tariff legislation in prospect concerns the modification or clarifying of a statement of the functions of the tariff commission, particularly in regard to the flexible tariff administration. In some cases the flexible tariff has failed to flex, and this has not been surprising. Certain interests, however, are insisting that the basis for determining competition of foreign goods be changed from costs of production to invoice prices when the goods are imported into the United States. The tariff commission has experienced no end of trouble in determining foreign production costs. This has been exemplified by the investigation of foreign pig iron costs, in which it has

been an extremely difficult matter to arrive at the foreign costs of production, especially where little evidence of a domestic market exists, such as in British India. It is considered likely that congress may be induced eventually to make these invoice costs the determining factor. In a year or two the inevitable tariff revision will come, and will grip the interest of every industry. In the meantime the commission's fact-finding facilities may be so strengthened as to make the task of revision less of a dubious quantity. Talk of abolishing the tariff commission this year will gain no ground.

The merchant marine problem and the shipping board are becoming two of the most absorbing subjects in the congressional session. The controversy revolves around the open warfare between the President and the shipping board, in which the President demanded that Admiral Leigh C. Palmer, who was forced by the board to resign as head of the Emergency Fleet Corp., have control of the disposal of the idle and obsolete vessel tonnage and to manage the ocean trade routes himself. The board, a self-styled independent government agency, deeply resented this.

The President wants one-man control of the board. So recommends Secretary Hoover, who has suggested that the president of the Fleet corporation in the future be named not by the board but by the President of the United States, with an advisory board of cabinet members and the chairman of the shipping board, this board to regulate trade routes and the sale of ships and routes, assisted by regional committees representing port districts.

Controversies have resulted, developing numerous resignations in the personnel of the shipping board and the Fleet corporation. Interwoven are regional jealousies, and the right of the President to dictate to independent agencies set up by congress.

Coal Problem to the Fore

The matter of control of the coal industry is cropping out in the congressional debates. President Coolidge has asked for authorization to appoint fact-finding boards through the secretaries of labor and commerce, to be clothed with powers to stimulate arbitration in case of strike tieups. A permanent government fact-finding agency for the coal industry has much support in congress, despite the claim of coal operators that such would be unconstitutional. The President also has suggested regional consolidations in the coal industry and more freedom in the formation of marketing associations, under supervision of the department of commerce.

The trade commission has aimed few thrusts at the iron and steel industry in the last year, with the Pittsburgh plus case out of the way. Hearings have been continuing on the attack of the Bethlehem-Midvale-Lackawanna mergers of 1922 and 1923, but the final disposition of the case seems to be a long way off.

No basic changes in the immigration law are expected this year, with the exception of possible relaxations on admission of aliens who are going into business, and also on admission of immediate relatives of naturalized citizens. Provision also may be made for the registration of all aliens.

At best the most foresighted observers can see nothing in the sky to bode storms for business. However, nothing in the life of the present session of congress will rival the achievement of its dissolution.

Eastern Merchant Stacks Facing Problems

(*Continued from Page* 63)

obtained through careful purchasing and properly timed and judicious selling. Careful attention to these factors has spelled success in certain cases over periods when a mistake in judgment would have meant losses instead of profits. Certain operators, as a result of their studies in determining the proper time to buy and the proper time to sell, have developed into high grade economists. It is to be said, however, that operation of a merchant furnace in this way is not considered as entirely satisfactory to anybody concerned. It involves a speculative element, and hard bargaining to wrest success from starvation conditions. It cannot be considered that management or trading ability indefinitely can compensate for advantages such as those provided, for instance, by ownership of a battery of by-product coke ovens.

It is of great interest to note the expressions of merchant pig iron men themselves. These were received by the writer in answer to requests for their opinions.

"I am of the opinion that the Eastern merchant furnace is not doomed," writes one operator. "But I believe that many of the furnaces will find it increasingly difficult to survive and may be forced to discontinue entirely due to the steelworks competition and high transportation charges from which there does not seem to be any relief in sight. I have not the belief that the steelworks furnaces can produce iron so much below some of the independents as the selling prices would indicate. If that be true, steelworks will not continue indefinitely to make such ruinous prices, as financial support would not be available.

"Looking ahead some years it appears to me that the greater part of the iron consumed in the East will be produced in the East, but on or near the coast where water transportation will give material relief in raw material cost and low freight rates to consuming points.

"I am inclined to the belief because of the great need and economy of by-product coke ovens, and for such operations it is essential to have a constant market for coke, that the merchant furnaces of the future will be those in connection with by-product plants located in or near the larger cities of the East, hence a somewhat different kind of merchant furnace."

Another well-informed pig iron man writes as follows:

"The merchant furnace in the East has been operating under great difficulties for several years past and as a result many of the smaller furnaces have either been dismantled or are in such a state of dilapidation that they may not be able to operate again. Some of the more modern furnaces have been idle for several years past, due to the fact that they are purely a merchant iron proposition and are unable to compete with the larger concerns that consume a large part of their output in their own mills and have by-product coke ovens.

"The importation of foreign iron, which has been coming into the Atlantic ports for a long while past at the rate of 25,000 to 50,000 tons per month, is keeping the more modern blast furnaces idle. It is difficult to understand why our government at Washington should allow a condition of this kind to exist, allowing pig iron to come in from abroad, while our own furnaces here in the East are standing idle.

"At the present rate, the importation of iron during 1925 will amount to nearly half a million tons, most of which should have been manufactured here in the East. This also means that the railroads are losing freight at the rate of two to two and a half million tons per year, as we estimate between four and five tons of material are involved in the manufacture of each ton of pig iron. The greater part of the imported iron is consumed along the Atlantic seaboard, which means the railroads would derive little or no freight from same.

"The merchant furnaces in the East do not, in my opinion, have a very bright future ahead of them. It seems to me that their only salvation lies in the erection of by-product coke ovens, or in affiliating themselves with the owners of by-product coke ovens and steel mills, or last, and most important of all, to have a tariff of $3 or $4 per ton placed upon foreign pig iron."

In a letter from another Eastern pig iron man the same thought is thus expressed: "In my judgment it is increasingly evident that merchant pig iron tends to become a by-product of the manufacture of by-product

coke, and hence that the business of supplying pig iron for the open market is increasingly to be found in the hands of companies owning their own by-product coke ovens, which to date are principally steelworks companies."

One clear-minded observer seems to take the attitude that pig iron suffered from abnormal conditions recently and that better things may be expected for the merchant furnace in the course of time. At least, that is the interpretation which the writer placed on the following expression on the market developments of 1925:

"Had the normal demands of the country required the normal output of steel, we would not have had the severe competition from the furnaces of the steel producers, and of course would have had prices which would at least have approximated the cost of production. The average merchant furnace operated at a loss and it is difficult to restrict production if loss of operation is less or no more than cost of idleness. Depression in Europe reduced the cost of importation of foreign iron, which, of course, had a depressing influence on the market, especially along the Atlantic seaboard."

Most eastern merchant furnace men, as indicated in a letter above quoted, have been keenly aroused by the competition of imported pig iron along the Atlantic seaboard. Earnest efforts have been made to get an increase in the present duty of 75 cents per gross ton, but without winning much support at Washington. In fact, there have been warnings that agitation might have the result of entire elimination of the tariff.

One eastern pig iron man takes a somewhat different view of the effects of the imports than the majority of those engaged in the industry. He says:

"Foreign competition is blamed for much of the unsatisfactory conditions but statistics reveal that the keenest competition exists among the domestic furnaces themselves. During the year domestic iron sold as low as $17 base, Birmingham, and $17.50 base, Buffalo. Eastern Pennsylvania touched its low point at $19 base during June and perhaps one or two important tonnages were sold by eastern Pennsylvania furnaces at a few cents less than $19 base. Foreign iron was offered freely at $19 to $19.50, base c.i.f. Atlantic ports, but, adding the tariff and a slight profit to the importer, made it necessary to sell the bulk of the tonnage at $20 to $21 on board cars at the docks."

Another pig iron man takes this philosophic view of the foreign competition:

"But with better industrial conditions abroad, Europe will have need of more of its own pig iron and there is a hope that this will bring definite relief from foreign competition in the seacoast markets."

A survey of this general development in the pig iron industry could not be completed without pointing out that water and pig iron now are intimately associated from the consumers standpoint. As furnaces that get their raw materials by water are in a position to ship to consumers located on the water, many foundries are taking in their iron by water to an increasing degree. Such consuming plants are located at Providence, Bridgeport, Florence, Burlington, Trenton, Baltimore, Bayonne and other points. These consumers, especially if provided with their own docks at which the iron may be unloaded directly into the raw material yards, effect a tidy saving as compared with shipments received by rail. In other words, the increasing importance of water in connection with the production of pig iron may have the effect of bringing about a greater concentration of eastern pig iron melting capacity at the waterside.

Virginia Contrast Reflects Changed Conditions

A PICTURE of the present stagnation in Virginia affords a striking and startling indication of the way changing conditions are killing off blast furnaces of the old-fashioned merchant type. Virginia for many decades was a flourishing pig iron producing state. There, many communities were built up on individual blast furnace units. The old ironmasters lived in fine old mansions, in all respects like lords of the manor. One of these blast furnace properties comprised 23,400 acres, a tract 10 miles long and three miles wide. Those were the golden days of the industry, when blast furnace properties were principalities.

The Virginia industry began the year 1925 with a total of 19 furnaces, of which three were in blast, two of them producing iron and the third ferromanganese. During the year, two furnaces were scrapped, reducing the total to 17. The year closed with only one furnace active in Virginia, and that on the verge of going out of blast for relining. The indications are that a furnace which shortly is to be blown in will be the only active furnace in Virginia for some time.

German Industry Needs More Capital

(*Concluded from Page* 115)

in the corresponding period of 1925, and those of bars and structural shapes from 301,550 tons to 396,028 tons. Scrap imports also increased from 20,626 tons to 209,820 tons, due to heavy shipments from Holland and Belgium. Last summer the German and French ironmasters came to an agreement regarding the annual import during three years of 1,750,000 metric tons of pig iron, semifinished steel and partly finished products at half the German import duty, while the other half of this duty is to be borne by the raw steel union. As compensation the minimum tariff will be applied by France on German iron and steel products imported into her territory.

So far, however, this so-called Luxemburg agreement has not become effective, as this will depend on the coming into force of the German-French commercial treaty and the fixing of a contingent for the whole Western-European iron and steel industry.

The pig iron market was dull during the greater part of the year. Whereas in 1913 out of 330 blast furnaces on the old territory 313 were in blast and out of 216 inside the present boundaries 204 were in blast, in January 1925 only 113 out of 215 stacks, and in October 93 out of 211 were blowing. In Upper Silesia at the end of the year only 6 out of 15 furnaces were in blast. The German output of pig iron consisted of about 62 per cent basic bessemer pig iron, 15 per cent of ferroalloys, 15 per cent foundry pig iron and 7 per cent hematite and other descriptions. Domestic sales of pig iron showed a decreasing tendency, and stocks on hand with producers accumulated heavily and prices weakened throughout the year. German imports of pig iron during the first nine months totaled 158,190 metric tons against 161,940 tons in the previous year, while exports increased from 34,910 tons to 126,878 tons, resulting mainly from better shipments to the United States, which absorbed 61,062 tons, Belgium and Sweden.

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	669,500	281,700	92,700	58,000
Monthly average 1921..	217,600	280,300	71,800	79,600
Monthly average 1922..	403,300	428,900	131,500	137,500
Monthly average 1923..	619,900	437,100	179,100	.....
1924				
January	636,600	576,900	205,700	159,700
February	612,700	581,100	.....	162,700
March	668,600	629,500	226,900	183,900
April	618,400	641,100	235,800	182,700
May	650,900	648,100	242,700	181,400
June	607,800	628,900	.....	.....
July	615,600	626,200	243,500	.....
August	588,900	643,400	240,500	.....
September	569,200	631,400	238,700	.....
October	586,400	649,600	242,400	.....
November	583,500	623,900	213,200	.....
December	580,300	654,900	242,700	.....
1925				
January	574,500	658,900	245,600	197,430
February	541,900	627,000	241,800	176,514
March	607,900	688,871	281,560	198,737
April	569,800	686,130	267,850	.....
May	574,700	695,200	270,500	186,800
June	510,300	692,400	209,400	187,100
July	492,700	712,800	165,800	199,400
August	444,500	701,400	163,400	198,700
September	448,700	705,400	165,000	192,700
October	473,700	.....	167,600	*730,200

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
Average monthly 1921..	137,100	38,500	43,300	.....
Average monthly 1922..	73,500	64,300	42,000	152,300
Average monthly 1923..	110,233	58,700	45,500	144,300
1924				
January	141,600	49,100	50,400	101,700
February	.....	59,400	50,900	126,600
March	165,200	58,800	66,500	89,600
April	198,900	64,800	60,400	75,700
May	300,100	50,300	53,000	95,800
June	175,500	53,500	49,300	144,600
July	201,200	61,400	38,200	100,800
August	173,700	66,400	33,100	39,600
September	207,200	66,100	44,000	41,700
October	241,300	52,500	38,800	77,500
November	213,000	57,500	.....	87,400
December	221,200	45,200	.....	279,200
1925				
January	234,800	26,500	.....	241,800
February	234,900	16,700	75,100	47,000
March	244,900	15,500	61,200	65,200
April	282,857	16,600	38,900	72,700
May	205,424	11,100	40,300	95,500
June	201,700	11,100	41,600	117,900
July	306,600	19,700	.....	96,900
August	232,800	14,000	.....	91,000
September	194,000	17,000	.....	110,300
October	218,300	.....	.....	.....

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	755,600	250,200	101,300	49,000
Monthly average 1921..	302,100	254,500	65,000	62,300
Monthly average 1922..	486,000	372,000	128,200	114,000
Monthly average 1923..	707,400	408,600	194,483	98,250
1924				
January	694,300	532,600	227,400	144,300
February	.....	546,000	.....	148,600
March	816,900	564,000	237,300	153,600
April	711,500	558,600	237,000	154,400
May	809,700	589,100	246,600	149,400
June	651,500	546,600	.....	.....
July	693,300	556,000	241,200	.....
August	527,500	572,600	234,400	.....
September	645,000	589,000	240,900	.....
October	678,500	599,600	252,400	.....
November	674,300	549,200	213,700	.....
December	551,000	595,700	241,200	.....
1925				
January	605,100	598,600	236,200	170,856
February	652,300	560,100	235,900	157,227
March	684,700	607,076	268,550	178,367
April	597,600	586,977	250,990	.....
May	651,600	587,000	248,800	164,500
June	585,400	590,500	193,600	168,400
July	590,400	615,600	152,700	179,100
August	477,100	607,100	147,900	170,800
September	640,100	621,800	162,000	177,400
October	652,400	.....	.....	*913,800

*Germany.

Exports

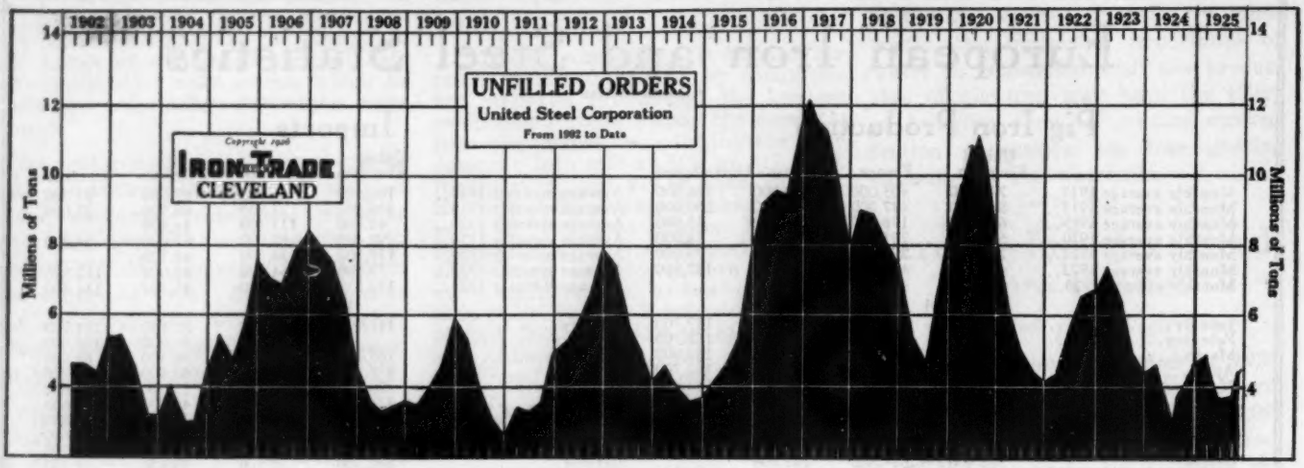
	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	517,300
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	270,900	74,600	74,300	143,600
Average monthly 1921..	141,700	132,700	75,900	176,000
Average monthly 1922..	283,400	164,000	143,000	209,700
Average monthly 1923..	359,975	173,700	208,466	108,900
1924				
January	337,400	211,700	.....	86,900
February	.....	269,200	240,400	104,000
March	288,200	303,900	290,600	103,000
April	336,800	307,000	294,400	87,700
May	406,900	224,700	327,000	90,200
June	324,400	226,300	289,100	85,100
July	339,700	166,200	266,900	89,900
August	301,100	181,600	278,300	114,100
September	263,800	179,500	291,700	99,900
October	309,200	213,500	286,600	139,900
November	311,600	205,600	.....	215,300
December	303,100	284,400	.....	319,600
1925				
January	325,400	270,300	.....	270,600
February	298,800	261,100	527,900	218,600
March	312,200	281,200	285,100	297,000
April	301,027	284,300	267,600	218,000
May	322,140	286,200	283,200	247,300
June	275,700	318,800	275,800	215,100
July	306,600	329,500	.....	251,400
August	287,800	338,200	.....	272,900
September	273,200	376,000	.....	.....
October	368,800	.....	.....	.....

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1925		
January	77,065	141,714
February	92,380	102,302
March	92,110	155,386
April	71,249	155,426
May	68,117	150,612
June	83,330	136,847
July	64,642	138,670
August	68,489	188,963
September	68,445	136,754
October	80,163	141,817
November	79,771	171,134
1924		
December	69,281	129,376
November	34,300	124,464
October	40,877	158,553
September	45,216	135,894
August	44,928	136,025
July	30,410	138,845
June	60,474	172,982
May	66,805	168,172
April	50,975	132,739
March	39,279	124,762
February	42,054	168,191
January	26,677	251,284
Total	556,733	1,805,064

1923		
December	27,012	179,215
November	26,534	186,770
October	29,884	154,079
September	36,612	173,664
August	45,432	163,010
July	53,448	170,259
June	68,019	172,747
May	75,891	204,988
April	77,909	179,159
March	106,206	165,624
February	67,707	135,182
January	120,080	124,444
Total	734,734	2,009,141
1922		
December	96,358	154,087
November	152,250	124,004
October	184,202	131,542
September	76,393	128,370
August	49,054	144,264
July	62,426	157,027
June	39,154	216,298
May	23,098	229,616
April	18,720	197,562
March	12,774	206,474
February	11,535	133,333
January	13,404	155,962
Total	643,010	1,988,539
Yearly Totals		
1921	117,105	2,156,818
1920	448,833	4,920,913
1919	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687



Unfilled Orders Rise As 1925 Closes

IMPROVEMENT in the iron and steel markets which appeared in the summer of 1925 was signalized by the increase of bookings for the United States Steel Corp. Orders reached their lowest ebb for the year at the close of August. The gain, which began in September with an increase of 204,494 tons, gathered momentum until it had mounted to an increase of 472,597 tons for November. Orders declined in 1925 to 3,512,803 tons. At that point they were well above the lowest ebb touched in July, 1924 of 3,187,072 tons, which figure was the smallest for any month since 1911. The present rising tide of orders does not reflect speculative buying, but rather greater commitments based upon expanded requirements of users.

Unfilled Tonnage Record of the United States Steel Corporation

1925		Tons on books	Changes
Nov.	30	4,581,780	472,597+
Oct.	31	4,109,183	391,886+
Sept.	30	3,717,297	204,494+
Aug.	31	3,512,803	26,664—
July	31	3,539,467	170,991—
June	30	3,710,458	339,342—
May	31	4,049,800	396,768—
April	30	4,446,568	416,996—
March	31	4,863,564	421 207—
Feb.	28	5,284,771	247,488+
Jan.	31	5,037,323	220,647+
Dec.	31	4,816,676	784,707+
1924			
Nov.	30	4,031,969	506,699+
Oct.	31	4,741,993	51,490+
Sept.	30	3,473,780	184,203+
Aug.	31	3,289,577	102,505+
July	31	3,187,072	75,433—
June	30	3,262,505	365,584—
May	31	3,628,089	580,358—
April	30	4,208,447	574,360—
March	31	4,782,807	130,094—
Feb.	29	4,912,901	114,472+
Jan.	31	4,798,429	350,183+
1923			
Dec.	31	4,445,339	76,755+
Nov.	30	4,368,584	304,241—
Oct.	31	4,672,825	362,925—
Sept.	30	5,035,750	378,913—
Aug.	31	5,414,663	496,100—
July	31	5,910,763	475,498—
June	30	6,386,261	595,090—
May	31	6,981,351	307,158—
April	30	7,288,509	114,823—
March	31	7,403,332	119,343+
Feb.	28	7,283,989	373,213+
Jan.	31	6,910,776	165,073+
1922			
Dec.	31	6,745,703	94,539—
Nov.	30	6,840,242	62,045—
Oct.	31	6,902,287	210,680+
Sept.	30	6,691,607	741,502+
Aug.	31	5,950,105	173,944+
July	31	5,776,161	140,630+
June	30	5,635,531	381,303+
May	31	5,254,228	157,311+
April	30	5,096,917	602,769+
March	31	4,494,148	353,079+
Feb.	28	4,141,069	100,609—
Jan.	31	4,241,678	26,736—
1921			
Dec.	31	4,268,414	17,872+
Nov.	30	4,250,542	36,287—
Oct.	31	4,286,829	273,841—
Sept.	30	4,560,670	28,744+
Aug.	31	4,531,926	298,398—
July	31	4,830,324	287,544—
June	30	5,117,868	364,619—
May	31	5,482,487	362,737—
April	30	5,845,224	439,541—
March	31	6,284,765	649,102—
Feb.	28	6,933,867	639,297—
Jan.	31	7,573,164	574,958—
1920			
Dec.	31	8,148,122	873,359—
Nov.	30	9,021,481	815,317—
Oct.	31	9,836,852	547,952—
Sept.	30	10,374,804	430,234—
Aug.	31	10,805,038	313,430—
July	31	11,118,468	139,651+
June	30	10,978,817	38,751+
May	31	10,940,466	580,719+
April	30	10,359,747	467,672+
March	31	9,892,075	389,994+
Feb.	28	9,502,081	216,640+
Jan.	31	9,285,441	1,020,075+
1919			
Dec.	31	8,265,366	1,137,036+
Nov.	30	7,128,330	655,662+
Oct.	31	6,472,668	188,030+
Sept.	30	6,284,638	175,535+
Aug.	31	6,109,103	530,442+
July	31	5,578,661	685,806+
June	30	4,892,855	610,545+
May	31	4,282,310	518,375—
April	30	4,800,585	629,887—
March	31	5,430,572	580,215—
Feb.	28	6,010,787	673,481—
Jan.	31	6,684,268	694,884—
1918			
Dec.	31	7,379,152	745,511—
Nov.	30	8,124,663	228,630—
Oct.	31	8,353,293	55,388+
Sept.	30	8,297,905	461,137—
Aug.	31	8,759,042	124,759—
July	31	8,883,801	35,065—
June	30	8,918,866	581,242+
May	31	8,337,623	404,259—
April	30	8,741,882	314,522—
March	31	9,056,404	232,049—
Feb.	28	9,288,453	189,400—
Jan.	31	9,477,853	96,135+
1917			
Dec.	31	9,381,718	484,612+
Nov.	30	8,897,106	112,567—
Oct.	31	9,009,675	823,802—
Sept.	30	9,833,477	573,572—
Aug.	31	10,407,049	437,115—
July	31	10,844,164	539,123—
June	30	11,383,287	503,304—
May	31	11,886,591	296,492—
April	30	12,183,083	471,439+
March	31	11,711,644	134,947+
Feb.	28	11,576,697	102,643+
Jan.	31	11,474,054	73,232—
1916			
Dec.	31	11,547,286	488,744—
Nov.	30	11,058,542	1,043,282+
Oct.	31	10,015,260	492,676+
Sept.	30	9,522,584	137,773—
Aug.	31	9,660,357	66,765+
July	31	9,593,592	46,866—
June	30	9,640,458	297,340—
May	31	9,937,798	108,247+
April	30	9,829,551	498,550+
March	31	9,331,001	762,035+
Feb.	29	8,568,966	646,199+
Jan.	31	7,922,767	116,547+
1915			
Dec.	31	7,806,220	616,731 —
Nov.	30	7,189,489	1,024,037+
Oct.	31	6,165,452	847,834+
Sept.	30	5,317,618	409,164+
Aug.	31	4,908,455	20,085—
July	31	4,928,540	250,233+
June	30	4,678,196	413,598+
May	31	4,264,598	102,244+
April	30	4,162,244	93,505—
March	31	4,255,749	89,622—
Feb.	28	4,345,371	96,800+
Jan.	31	4,248,571	411,928+
1914			
Dec.	31	3,836,643	512,051+
Nov.	30	3,324,592	136,505—
Oct.	31	3,461,097	326,570—
Sept.	30	3,787,667	425,664—
Aug.	31	4,213,331	54,742+
July	31	4,158,589	125,732+
June	30	4,032,857	34,697+
May	31	3,998,160	278,908—
April	30	4,277,068	376,757—
March	31	4,653,825	372,615—
Feb.	28	5,026,440	412,750+
Jan.	31	4,613,680	331,572+
1913			
Dec.	31	4,282,108	114,239—
Nov.	30	4,396,347	117,420—
Oct.	31	4,513,767	490,018—
Sept.	30	5,003,785	219,683—
Aug.	31	5,223,468	175,888—
July	31	5,399,356	407,961—
June	30	5,807,317	517,005—
May	31	6,324,322	654,440—
April	30	6,978,762	490,194—
March	31	7,468,956	187,758—
Feb.	28	7,656,714	170,654—
Jan.	31	7,827,368	104,796—
1912			
Dec.	31	7,932,164	79,281+
Nov.	30	7,852,883	258,502+
Oct.	31	7,594,381	1,042,874+
Sept.	30	6,551,507	388,132+
Aug.	31	6,163,375	206,296+
July	31	5,957,079	149,773+
June	30	5,807,346	56,363+
May	31	5,750,983	86,098+
April	30	5,664,885	360,044+
March	31	5,304,841	149,359—
Feb.	28	5,454,200	74,479+
Jan.	31	5,379,721	294,960+
1911			
Dec.	31	5,084,761	942,806+
Nov.	30	4,141,955	447,627+
Oct.	31	3,694,328	83,011+
Sept.	30	3,611,317	84,668—
Aug.	31	3,695,985	111,900+
July	31	3,584,085	223,027+
June	30	3,361,058	247,871+
May	31	3,113,187	105,617—
April	30	3,218,704	228,597—
March	31	3,447,301	46,758+
Feb.	28	3,400,543	289,624+
Jan.	31	3,110,919	436,162+
1910			
Dec.	31	2,674,757	85,656—
Nov.	30	2,760,413	111,536—
Oct.	31	2,871,949	286,157—
Sept.	30	3,158,106	379,022—
Aug.	31	3,537,128	433,803—
July	31	3,970,931	286,863—
June	30	4,257,794	1,144,720—
March	31	5,402,514	525,517—
1909			
Dec.	31	5,927,031	1,130,192+
Sept.	30	4,796,833	738,896+
June	30	4,057,939	514,434+
March	31	3,542,595	60,932—
1908			
Dec.	31	3,603,527	181,550+
Sept.	30	3,421,977	108,101+
June	30	3,313,876	451,467—
March	31	3,765,343	859,210—
1907			
Dec.	31	4,624,553	1,800.455—
Sept.	30	6,425,008	1,178,870—
June	30	7,603,878	439,980—
March	31	8,043,585	445,860—
1906			
Dec.	31	8,489,718	552,834+
Sept.	30	7,936,884	1,127,305—
June	30	6,809,589	208,123—
March	31	7,018,712	586,374—
1905			
Dec.	31	7,605,086	1,739,709+
Sept.	30	5,865,377	1,035,722+
June	30	4,829,655	767,905—
March	31	5,597,560	901,357+

Industrial Construction Shows Increase

(*Continued from Page* 59)

an experiment along somewhat similar lines in the United States may have some bearing on designs of future industrial plants. A building recently erected in the United States was constructed entirely of steel for girders, wall supports, braces and other framework, the parts being bolted together. Speed in erection and permanency of structure in addition to cleanliness and fireproof qualities lend much to this type of building.

Introduce Welding Construction

One of the most interesting developments in fabricating steel for industrial buildings is in the wider use of welding. A semi-industrial plant in Canton, O., recently completed by the Morgan Engineering Co., Alliance, O., was arc welded. Seasonal fluctuation in the building industry is becoming less and less noticeable. The building season is being lengthened gradually as the result in part of a drive undertaken by the construction industries in co-operation with the department of commerce. Reports from contractors in 16 large cities showed that labor payrolls and material purchases were larger during the winter months of 1924 than in those of 1923. Making allowance for better business conditions and weather differences, the gain of 1924 is a good indication of the trend to year round activity in building. All interests in the building industry are attempting to iron out the seasonal curves and to create a sounder and stronger market.

Forecasts for industrial building in 1926 are uniformly encouraging. Prospective work now in course of financing or on architects boards indicates a continuance of the high volume of building which reached the contract stage during the last quarter of 1925.

Main factors tending to increase construction during 1926 are the replacement of buildings the maintenance of which has reached the border line between profits and losses, the enlargement of plants necessitated by a healthy expansion of business and introduction of new products and processes, erection of branch plants and the establishment of new companies.

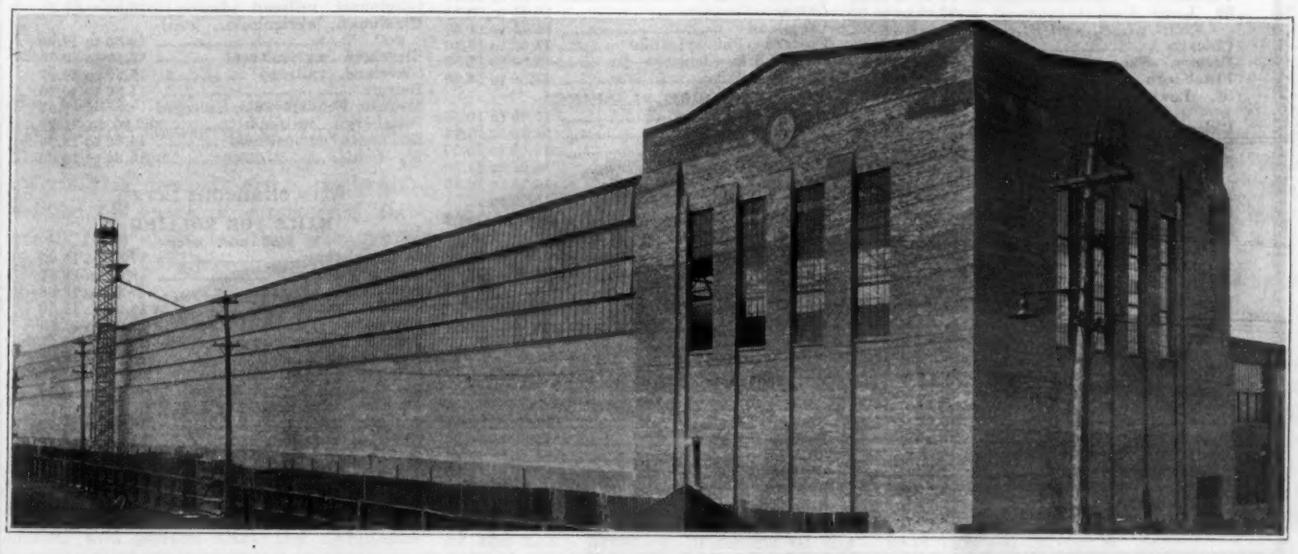
Modernization of plants is an important item in industrial construction. Keen competition with resultant narrow margins of profit during the past year has caused industrial executives to scrutinize carefully all expenditures. New plants have played their part in reducing operating expenses by more efficient layouts, minimizing nonproductive space and installing new features lacking in older structures. Natural growth of consumption of manufactured products in the United States also is aiding plant construction. "In the majority of cases where industrial design and construction is involved, floor space is being added in order to make possible improvements in existing production and warehousing methods," according to W. M. Brown, secretary of the H. K. Ferguson Co., Cleveland, builder.

"Prospects are excellent for continuance of industrial buildings in large volume during 1926," says E. H. Temple, Jr., general manager of the Aberthaw Co., Boston, builder. This company expects to see prices of labor and materials rise slightly during 1926, but not to such heights as to hinder the volume of building.

Construction in 1926 will approximate $6,000,000,000 according to the annual forecast of the *Architectural Forum*. It is estimated that a total of 778,440 structures will be erected during the year, of which 9782 will be industrial buildings. The survey says in part: "There is some talk of the building shortage having been met, of rentals coming down, of building again assuming its normal activity. What is a normal building year at the present time? Surely it cannot be the prewar normal. The population of the United States has increased materially since then; the cost of building has increased; the standards of housing American life and business have been raised, and the demand for building is greater. The probable normal building year of today is $4,000,000,000 or more, and on this basis it would take three or four more $6,000,000,000 years to meet the still existing shortage."

South Grows in Importance

In its detailed analysis of prospective building in 1926, the *Architectural Forum* approximates the division of industrial construction as follows, according to valuation: Northeastern states, $42,632,500; North Atlantic states, $248,917,500; Southeastern states, $6,527,500; Southwestern states, $29,710,000; Middle Atlantic states $130,962,500, and Western states, $24,542,500. Increasing development of the industrial resources of the South is enlarging the demand for buildings for manufacturing purposes in that district. Enhanced importance of the Middle West and Pacific Coast states as logical centers of industrial operation also is increasing the construction placed.



WEST BAY OF THE FOUNDRY RECENTLY CONSTRUCTED FOR THE STUDEBAKER CORP., SOUTH BEND, IND. IN THIS BAY MATERIALS ARE STORED UNDER COVER

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 14.50
Boston (dealers)	12.50 to 13.00
Buffalo	18.00 to 18.50
Buffalo, No. 1	19.50
Chicago	15.00 to 15.50
Cincinnati (dealers)	13.50 to 14.00
Cleveland	17.50 to 17.75
Detroit	14.75 to 15.25
Eastern Pennsylvania	18.00 to 18.50
Bethlehem delivery	17.00 to 17.50
New York (dealers)	12.50 to 13.00
Pittsburgh	19.00 to 19.50
St. Louis	15.00 to 15.50
Valleys	18.50 to 18.75

COMPRESSED SHEETS

Buffalo	17.75 to 18.25
Chicago	13.50 to 14.00
Cleveland	15.00 to 15.75
Detroit	12.50 to 13.00
Pittsburgh	17.75 to 18.25
Valleys	17.00 to 17.50

BUNDLED SHEETS

Buffalo	15.00 to 15.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	12.50 to 12.75
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	16.75 to 17.25
St. Louis	10.00 to 10.50
Valleys	15.25 to 15.75

SHEET CLIPPINGS, LOOSE

Chicago	9.50 to 10.00
Cincinnati	9.50 to 10.00
Detroit	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Buffalo	19.00 to 19.50
Chicago	19.25 to 19.75
Cincinnati (dealers)	17.00 to 17.50
Cleveland (over 6 ft.)	16.75 to 17.00
Detroit	17.00 to 17.50
St. Louis	18.25 to 18.75

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.25
Chicago	16.50 to 17.00
Cincinnati (dealers) (net)	10.00 to 10.50
Cleveland	13.75 to 14.00
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	21.00 to 21.50
Cincinnati (dealers)	18.00 to 18.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	24.00 to 24.50

SHOVELING STEEL

Chicago	15.00 to 15.50
Pittsburgh	14.50 to 15.00
St. Louis	15.00 to 15.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.00 to 18.50
Eastern Pennsylvania	20.50 to 21.50
Pittsburgh	21.50 to 22.00
St. Louis	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	17.25 to 17.75
Eastern Pennsylvania	17.00 to 17.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	18.25 to 18.75
St. Louis	16.00 to 16.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	13.00 to 13.50
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	18.00 to 18.50
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	15.25 to 15.75
Cincinnati, No. 1 (dealers)	10.00 to 10.50
Cleveland, No. 1	13.75 to 14.25
Eastern Pennsylvania	18.50 to 19.00
New York, No. 1 (dealers)	15.75 to 16.25
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	19.00 to 19.50
St. Louis, No. 1	13.75 to 14.25
St. Louis, No. 2	15.00 to 15.50

WROUGHT PIPE

Boston (dealers)	12.00 to 12.50
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	12.50 to 12.75

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 17.50

BUSHELING

Buffalo	17.75 to 18.25
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	14.75 to 15.00
Cleveland, No. 2	14.25 to 14.50
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	16.00 to 16.50
St. Louis, No. 1	13.00 to 13.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (chemical)	9.50 to 10.00
Buffalo	13.25 to 13.75
Chicago	10.00 to 10.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	14.25 to 14.50
Detroit	10.50 to 11.00
Eastern Pennsylvania	15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	15.00 to 15.50
St. Louis	9.00 to 9.50
Valleys	12.50 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	9.50 to 10.00
Buffalo	13.75 to 14.25
Chicago	13.50 to 13.75
Cincinnati (dealers)	10.00 to 10.50
Cleveland	14.75 to 15.25
Detroit	11.00 to 11.50
Eastern Pennsylvania	15.00
Eastern Pennsylvania (chem.)	17.00 to 17.50
New York (dealers)	10.75 to 11.25
Pittsburgh	15.00 to 15.50
St. Louis	12.00 to 12.50
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.00 to 10.00
Buffalo	13.50 to 14.00
Cincinnati (dealers)	9.50 to 10.00
Cleveland	14.75 to 15.00
Detroit	11.25 to 11.75
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.75 to 11.25
Pittsburgh	14.50 to 15.00

PIPES AND FLUES

Chicago	12.75 to 13.25
Cincinnati (dealers)	8.50 to 9.00
Cleveland	12.25 to 12.50
St. Louis	11.50 to 12.00

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	15.75 to 16.25
Cleveland	13.75 to 14.00
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	12.00 to 12.50
St. Louis	13.50 to 14.00

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	10.00 to 10.50
Cleveland (under 10 in.)	14.25 to 14.50
Cleveland (over 10 in.)	14.25 to 14.50
Detroit	10.75 to 11.25
Pittsburgh	16.00 to 16.50

FORGE SCRAP

Boston (dealers)	10.00 to 10.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	15.25 to 15.75

ARCH BARS AND TRANSOMS

Chicago	23.50 to 24.00
St. Louis	21.50 to 22.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	10.00 to 10.50
Buffalo	15.00 to 15.50
Chicago	14.50 to 15.00
Cleveland	15.25 to 15.50
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh	18.00 to 18.50
St. Louis	12.50 to 13.00

STEEL CAR AXLES

Birmingham	18.00 to 20.00
Boston (shipping point)	18.00 to 19.00
Buffalo	20.00 to 20.50
Chicago	19.25 to 19.75
Cleveland	18.00 to 18.50
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	22.50 to 23.00
St. Louis	19.00 to 19.50

SHAFTING

Boston (shipping point)	18.50 to 19.00
Chicago	20.75 to 21.25
Eastern Pennsylvania	23.00 to 23.50
New York (dealers)	18.50 to 19.50
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo, iron	17.00 to 17.50
Buffalo, steel	19.50 to 20.00
Chicago, iron	18.00 to 18.50
Chicago, steel	18.50 to 19.00
Cincinnati	13.00 to 13.50
Eastern Pennsylvania	18.50 to 19.00
New York iron (dealers)	15.00 to 15.50
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	17.25 to 17.75
St. Louis, steel	18.00 to 18.25

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 17.50
Boston	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	19.50 to 20.00
Chicago No. 1 railroad or agricultural	18.00 to 18.50
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.00 to 18.50
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	16.50 to 17.00
St. Louis, agricultural	16.25 to 16.75
St. Louis, machinery	18.50 to 19.00
Valleys	18.00 to 18.50

HEAVY CAST

Boston	16.50 to 17.00
Buffalo (breakable)	16.50 to 17.00
Cleveland	13.00 to 13.50
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	17.00 to 17.50

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	20.00 to 20.50
Chicago, agricultural	16.75 to 17.25
Chicago, railroad	18.00 to 18.50
Cincinnati, railroad (dealers)	15.00 to 15.50
Cincinnati, agricultural (dealers)	16.50 to 17.00
Cleveland, agricultural	18.50 to 18.75
Cleveland, railroad	19.50 to 20.00
Detroit	15.50 to 16.00
Eastern Pennsylvania, railroad	17.00
Pittsburgh, railroad	20.50 to 21.00
St. Louis, agricultural	14.50 to 15.00
St. Louis	15.50 to 16.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.50 to 18.00
Boston (dealers)	13.00 to 13.50
Buffalo	18.00 to 18.50
Chicago	18.00 to 18.50
Cleveland	17.25 to 17.50
Eastern Pennsylvania	18.50 to 19.00
New York	15.50 to 16.00
Pittsburgh district	21.00 to 21.50
St. Louis	17.50 to 18.00

LOCOMOTIVE TIRES

Chicago, No. 1	18.00 to 18.50
Chicago, cut	18.75 to 19.25
St. Louis, No. 1	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	17.75 to 18.25
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.00 to 21.50

Group Competition Factor In Distribution

(*Concluded from Page* 10)

on account of increased sales volume.

3. Lowering prices to consumers and thereby raising the standard of living.

4. As a by-product, aiding in the education of the general public.

In addition, the report includes information on the bad effects of ill advised discontinuance of advertising and on the causes of waste in advertising.

In its report on the expenses of doing business, committee IV, under the chairmanship of Robert R. Ellis, president, Hessig-Ellis Drug Co., Memphis, Tenn., reveals a lack of information on costs and a deplorable volume of waste in commercial failures. It is estimated that from 35 to 50 per cent of all business failures in the United States are "either fraudulent or tinged with fraud."

The complexity of the distribution system is clearly brought out in the report of committee V, on methods of distribution, headed by L. D. H. Weld, Swift & Co., Chicago. The committee entertains little hope for eliminating intermediaries in the distribution chain, and states that the functions performed by them are necessary.

Committee VI, on conditions affecting distribution, devoted the major portion of its report to federal and state legislation. Headed by Gabriel S. Brown, president, Alpha Portland Cement Co., Easton, Pa., the committee outlines tendencies in enforcing the principles of competition as displayed in the Sherman, Clayton and Federal Trade commission acts. The discussion of this report at the conference revealed a surprising difference of opinion among business men on the subjects of monopoly, competition and federal supervision. Unquestionably the business world must be brought to a sound basis of understanding on these principles before an intelligent national policy can be developed.

Advocates of improved distribution methods attending the second conference were disappointed in its apparent inability to authorized definite action. Held under the auspices of the chamber of commerce, its functions were purely advisory and its powers were limited to recommendations to the directors of the chamber. But even under this handicap, the conference may still prove its value. If the 24 resolutions adopted are received favorably by the directors and the suggested action carried out, some of the more pressing problems of distribution gradually will be solved.

Perhaps the most important recommendation is that providing for a continuation of Committee I and its eventual replacement by a permanent organization to collect business statistics on distribution. The second most significant suggestion is that urging congress to authorize the bureau of census to conduct a census of distribution comparable with the biennial census of manufactures. A third resolution, which is charged with unlimited possibilities, provides for a joint trade relations committee to act as a clearing house for complaints of objectionable and destructive practice.

If the action contemplated in these three recommendations materializes, the conferences will have been successful beyond the hopes of their most optimistic advocates. As it is, they served to kindle the sparks of interest.

All signs point to the conclusion that the worthy cause of better distribution is advancing. Only five years ago the term "distribution" was rarely seen or heard except in the statements or utterances of a limited number of economists. Today it is in the minds of thousands of manufacturers, jobbers and retailers. It has reached the conference stage. The next logical step is definite action, which, let us hope, will be ushered in during the new year.

Second Conference Reveals Status of Distribution Problem

PRECEDING the official resolutions passed by the second National Distribution Conference held at Washington, Dec. 15 and 16, 1925, is the following summary of conclusions, which is a cleancut statement on the present status of the distribution problem:

1. *The present methods of distribution have been developed by economic forces and fundamentally are sound.*

2. *The essential distribution functions now performed by various agencies are fundamental and none may be eliminated but must be assumed and continued by others if present agencies are replaced by new methods.*

3. *Wasteful practices as they exist are not inherent in the present machinery of distribution, but arise through human failings such as lack of definite organized information and the imperfection of performance which characterizes alike producer, manufacturer and distributor.*

4. *Market prices must include cost of production and of essential services with reasonable profits if reductions are not merely to be temporary.*

5. *Necessary distribution services are entitled to their just pay.*

6. *Efforts must be initiated and encouraged to promote collection of specific information revealing duplication of services and the rendering of unwarranted services, to the end that necessary or desirable services may be provided increasingly at lower costs.*

7. *Costs of various services should be ascertained and published; consumers then may judge of their necessity in relation to their costs, that they may be continued or discontinued.*

8. *That producers, manufacturers, distributors and consumers require fuller understanding of the processes of distribution making it possible to avoid unnecessary exactions and to facilitate the flow of goods which alone can reduce costs materially.*

9. *Responsibility for inflation of present prices by waste centers no less on producer and manufacturer than on distributor. No little part of this waste is attributable to unreasonable demands by consumers for unnecessary distribution services. The effects are passed through all the steps of distribution and embarrass and retard facile functioning.*

10. *These problems are possible of solution only with the fullest information, hearty co-operation and recognition of complete mutuality of interest, particularly between consumer and producer and these distributive agencies operating to assist both.*

Sheet Extras and Differentials

Black Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.20
29 Add	0.10
28 (Carload quantities)	Base
27 Deduct	0.05
25-26 Deduct	0.10
22-24 Deduct	0.15
17-21 Deduct	0.20
15-16 Deduct	0.25
13-14 Deduct	0.30
10-12 Deduct	0.35

BLACK EXTRAS FOR WIDTH

Gages	Under 12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over36 inches to 40 inches	Over 40 inches to 44 inches	Over 44 inches to 48 inches
10 to 16	0.20	0.10	Base	Base	Base	Base	Base
17 to 18	0.25	0.15	Base	Base	0.05	0.05	0.05
19 to 21	0.25	0.15	Base	Base	0.15	0.15	0.25
22 to 24	0.25	0.15	Base	Base	0.20	0.40	0.40
25 to 27	0.30	0.20	Base	Base	0.20	0.40	...
28	0.30	0.20	Base	0.10	0.40	...	...
29 to 30	0.30	0.20	Base	0.10	...	...	...

BLACK EXTRAS FOR LENGTH

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	60 inches to 124 inches	Over 124 inches to 144 inches
10 to 16	0.15	0.10	Base	Base
17 to 18	0.25	0.15	Base	0.10
19 to 21	0.25	0.15	Base	0.10
22 to 24	0.25	0.15	Base	0.10
25 to 30	0.30	0.20	Base	0.10

Galvanized Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.50
29 Add	0.25
28 (Carload quantities)	Base
27 Deduct	0.15
25-26 Deduct	0.30
22-24 Deduct	0.45
17-21 Deduct	0.60
15-16 Deduct	0.75
12-14 Deduct	0.90
10-11 Deduct	1.00

GALVANIZED EXTRAS FOR WIDTH

Gages	Under12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over 36 inches to 40 inches	Over 40 inches to 42 inches	Over 42 inches to 44 inches	Over 44 inches to 52 inches	Over 52 inches to 54 inches
10 to 15	0.25	0.20	Base	Base	Base	0.10	0.20	0.30	0.40
16	0.25	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
17 to 17	0.30	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
19 to 21	0.30	0.20	Base	Base	0.20	0.30	0.40	0.50	0.75
22 to 24	0.30	0.20	Base	Base	0.20	0.40	0.60	...	...
25 to 26	0.35	0.25	Base	Base	0.30	0.60	...	...	...
27	0.35	0.25	Base	0.10	0.50	0.75	...	...	...
28	0.35	0.25	Base	0.20	0.60	...	...	...	...
29 to 30	0.35	0.25	Base	0.20	...	...	...	...	...

GALVANIZED EXTRAS FOR LENGTHS

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	60 inches to 124 inches	Over 124 inches to 144 inches	Over 144 inches to 168 inches	Over 168 inches to 180 inches	Over 180 inches to 192 inches	Over 192 inches to 216 inches	Over 216 inches to 228 inches
10 to 12	0.20	0.10	Base	Base	0.50	0.60	0.60	0.75	1.00
13 to 14	0.20	0.10	Base	Base	0.50	0.75	0.75	1.00	1.50
15 to 16	0.20	0.10	Base	Base	0.50	0.75	...	...	...
17 to 24	0.30	0.20	Base	0.10	...	...	...	...	...
25 to 30	0.35	0.25	Base	0.10	...	...	...	...	...

Blue Annealed Sheets

GAGE DIFFERENTIALS

Gage	Price per 100 pounds
8 and heavier	Less $0.05
9 and 10, carload quantities	Base
11 and 12	0.05
13 and 14	0.10
15 and 16	0.20

EXTRAS FOR WIDTH

Gage	Extra per 100 pounds
16 and heavier under 24 to 12-inch	$0.10
16 and heavier under 12 to 6-inch	0.15
16 and heavier under 24-inch and wider	None

EXTRAS FOR LENGTH

Gage	Extra per 100 pounds
16 and heavier, 60-inch and longer	None
16 and heavier, under 60 to 30-inch	0.10
16 and heavier, under 30 to 18-inch	0.15
Deoxidizing	0.15
Extra deep stamping or drawing	0.50

STANDARD MISCELLANEOUS EXTRAS

	Extra per 100 pounds
Blued range steel	$0.70
Blued range steel patent leveled	0.95
Blued stove pipe stock, 25 gage and lighter	0.20
Blued stove pipe stock, 24 gage and heavier	0.50
Enameling stock, pickled and annealed finish	0.50
Deep stamping or drawing	0.25
Extra deep stamping or drawing	0.50
Extra box anneal	0.15
Full cold rolled and reannealed	0.25
Full pickled, full cold rolled and reannealed	0.75
Lime finish	0.10
Long ternes, special finish	0.75
Oiling	0.10
Patent or stretcher leveling	0.25
Pickled, annealed, cold rolled and reannealed for tinning	0.50
Resquaring, 5% of price of sheet at time of resquaring.	
Roller leveling	0.10
Single pickled	0.45
Single pickled, cold rolled and reannealed	0.50
Single pickled, oiled or lime finish	0.35
Carbons over 0.25 to 0.40 per cent	0.10
Carbons over 0.40 to 0.60 per cent	0.25
Carbons over 0.60 to 0.90 per cent	0.40
First grade metal furniture stock, full pickled, full cold rolled, reannealed, stretcher leveled, not resquared	1.00
Second grade metal furniture stock, single pickled, full cold rolled reannealed, stretcher leveled, not resquared	0.85

Automobile Sheets

	Primes with seconds up to 15% per 100 lbs.
Automobile body stock	Base, 22 gage
Auto body stock, deep stamping	0.25
Auto body stock, extra deep stamping	0.50
Hood, flat fender, door and apron, or splash guard stock	0.25
Crown fender, cowl and radiator casing, deep stamping	0.50
Crown fender, cowl and radiator casing, extra deep stamping	0.75

Price of seconds, 10 per cent less than the invoice price for corresponding primes.

EXTRAS FOR EXTREME WIDTHS

	Per 100 lbs.
10-16 gage over 36 inches to 44 inches	0.10
10-16 gage over 44 inches to 48 inches	0.35
10-16 gage over 48 inches to 52 inches	0.50
17-18 gage over 36 inches to 44 inches	0.10
17-18 gage over 44 to 48 inches	0.20 to 0.35
17-18 gage over 48 inches to 52 inches	0.60
18 gage and heavier under 24 to 12 inches	0.15
18 gage and heavier under 12 to 6 inches	0.25
19 gage and lighter under 24 to 12 inches	0.15
19 gage and lighter under 12 to 6 inches	0.25
19-21 gage over 36 inches to 44 inches	0.30
19-21 gage over 44 inches to 48 inches	0.50
22-24 gage over 36 inches to 40 inches	0.40
22-24 gage over 40 inches to 44 inches	0.80

Black sheet extras to apply on narrow widths.

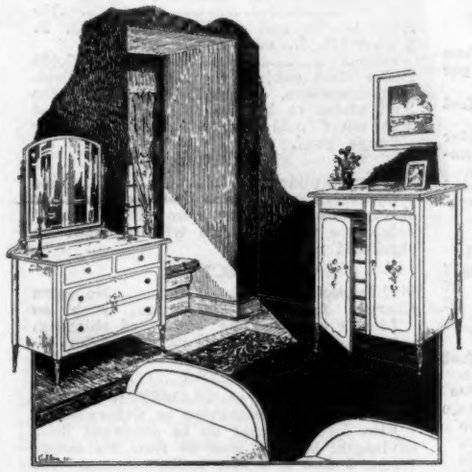
EXTRAS FOR LENGTHS

	Price per 100 pounds
16 gage and heavier over 60 inches to 144 inches	Base
16 gage and heavier under 60 inches to 30 inches	$0.10
16 gage and heavier under 30 inches to 18 inches	0.15
17 to 24 gage over 24 inches to 144 inches	0.10
17 to 24 gage under 60 inches to 30 inches	0.15
17 to 24 gage under 30 inches to 18 inches	0.25
25 gage and lighter over 24 inches to 144 inches	0.10
25 gage and lighter under 60 inches to 30 inches	0.20
25 gage and lighter under 30 inches to 18 inches	0.30

MANSFIELD

Mansfield Steel Sheets are remarkably uniform in both quality and finish. They owe their high character to the fact that they are rolled from ingots of exceptional purity.

Scientific treatment of the metal in the open-hearth furnace, and the distinctive Mansfield method of pouring result in ingots that are unusually low in sulphur and free from "pipes", seams, etc.



Automobile Sheets

Metal Furniture Sheets

Wabik Metal Sheets For Vitreous Enameling

Electrical Sheets

Pickled and Annealed Enameling Stock

Milk Can Stock

SHEET BARS, INGOTS

Manufacturers are invited to write for complete details of Mansfield Sheets and the possibilities they offer for increased excellence in a variety of products.

Mansfield Sheet & Tin Plate Company

Mansfield, Ohio

District Sales Offices:
12-237 General Motors Bldg., Detroit, Mich.
1372 Wrigley Bldg., Chicago, Ill.
410 Pierce Bldg., St. Louis, Mo.
1106 National City Bldg., New York, N. Y.
2002 Union Trust Bldg., Cleveland, Ohio
1504 West Venango Street, Philadelphia, Pa.

Contributing Member
SHEET STEEL
TRADE EXTENSION COMMITTEE

District Sales Offices:
1403 Merchants Bank Bldg., Indianapolis, Ind.
1020 Union Trust Bldg., Cincinnati, Ohio
640 Endicott Bldg., St. Paul, Minn.
237 Rialto Bldg., San Francisco, Calif.
509 Wilcox Bldg., Los Angeles, Calif.
1426 L. C. Smith Bldg., Seattle, Wash.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

¼-inch	42	12½
⅜ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	33	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	28	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	25	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	28 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925
Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per Pound for Width or Diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{1}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{1}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c

Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel ..... .10c

High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications 1.00c

Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B..... 1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

Sivyer Castings can be forged and welded

To the left is a latch, and to the right a jaw, casting for an oil well tool and pipe tong. Both of these important parts are cast in Sivyer Electric Steel.

SIVYER CASTINGS DEPENDABLE

What We Mean by Interior Soundness

THE casting pictured to the left, above, is an example of what we mean by *interior soundness.* In this particular job the light section at the lower end of the piece tends to draw the metal as the casting cools. The natural result of such an action is a "shrink hole" somewhere along the lower end of the thicker head. A casting with such a defect must either be scrapped or must be passed on with the danger of breakage in service. Here, as in so many other cases, Sivyer Foundry Practice has been able to eliminate both dangers for the manufacturer. A careful study of the part has led to the proper distribution of "heads," "gates," "risers" and "feeders" on the casting pattern. As a result, the natural "shrink" has been definitely "licked." How completely, is illustrated by the fact that not a single one of these castings has been reported as having broken in service.

SEND BLUE PRINTS

If you are having trouble with castings cast in other metals or by other methods, it is quite probable that Sivyer Electric Steel may be your solution.

At any rate the cost of sending us blue prints of the parts giving trouble is small—and we will be glad to tell you all we can without obligating you in any way.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Iron and Steel Production

IN GROSS TONS

Pig Iron

Compiled by IRON TRADE REVIEW

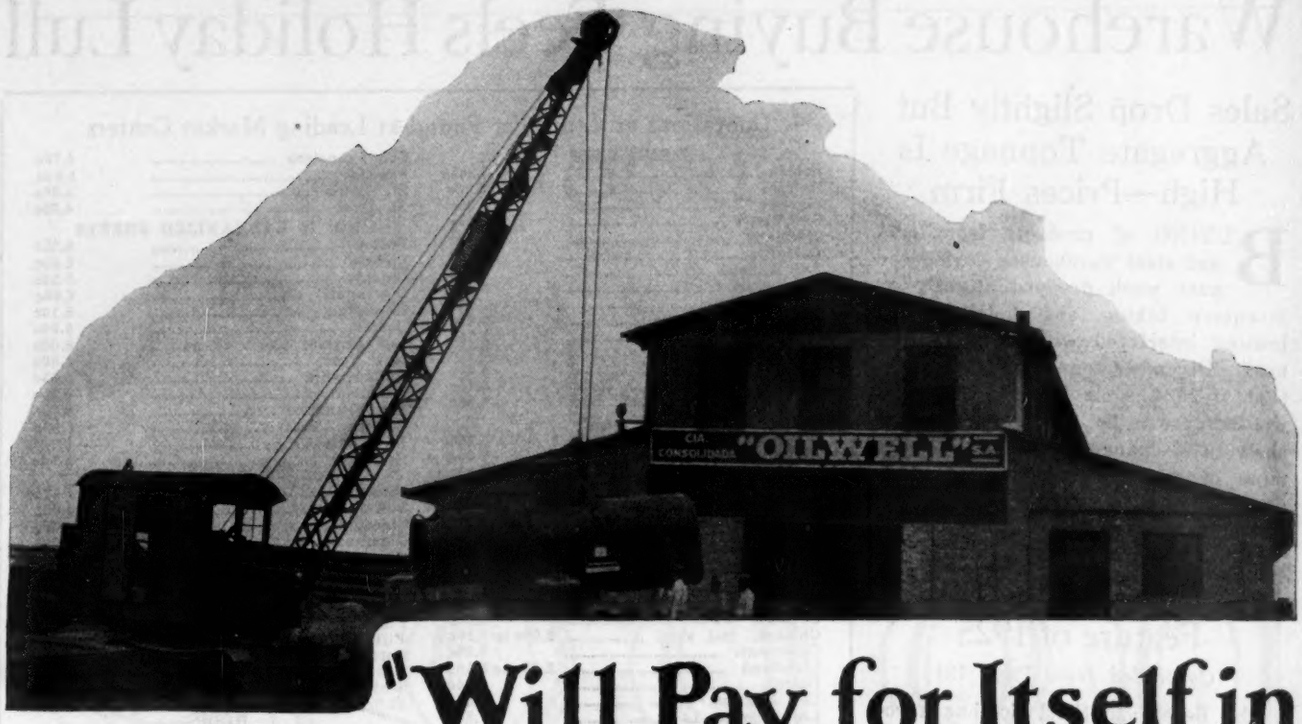
	Stacks No.	Stacks In	Output Total	Output Av. daily	Stacks No.	Stacks In	Output Total	Output Av. daily	Stacks No.	Stacks In	Output Total	Output Av. daily	Stacks No.	Stacks In	Output Total	Output Av. daily
			1907				1908				1909				1910	
January	376	311	2,174,801	70,155	398	139	1,081,813	34,897	406	234	1,787,473	57,683	416	311	2,599,995	83,871
February	374	308	2,047,036	73,109	401	150	1,086,809	37,476	407	233	1,682,470	60,088	417	311	2,429,525	86,768
March	377	304	2,186,709	70,539	398	154	1,229,856	39,672	406	229	1,822,024	58,793	417	310	2,588,736	83,508
April	378	327	2,226,708	74,223	398	146	1,155,122	38,504	406	224	1,731,406	57,687	418	291	2,477,700	82,590
May	391	329	2,291,080	73,904	396	145	1,168,002	37,677	407	236	1,866,757	60,218	419	279	2,374,802	76,607
June	392	341	2,237,420	74,580	395	154	1,106,300	36,876	408	240	1,929,929	64,334	420	271	2,288,279	76,276
July	396	335	2,253,243	72,685	397	166	1,228,604	39,632	409	258	2,088,620	67,375	420	254	2,158,124	69,617
August	397	329	2,243,656	72,376	399	181	1,366,019	44,065	412	278	2,232,642	72,021	422	244	2,103,791	67,864
September	399	329	2,174,148	72,471	399	189	1,416,252	47,208	413	297	2,378,655	79,201	420	234	2,048,461	68,282
October	401	314	2,359,690	76,119	400	200	1,573,824	50,764	413	309	2,589,681	83,538	421	230	2,086,205	67,297
November	398	226	1,820,558	60,685	402	212	1,582,314	52,744	414	311	2,532,740	84,425	421	218	1,910,385	63,679
December	398	154	1,234,733	39,830	403	221	1,723,664	55,602	416	314	2,682,702	86,539	421	193	1,779,899	57,416
Total			25,249,732	*69,177			15,718,579	*42,947			25,325,099	*69,383			26,845,902	*73,550
			1911				1912				1913				1914	
January	421	210	1,766,658	56,985	421	227	2,052,806	66,220	423	297	2,787,800	89,929	423	199	1,879,336	60,624
February	421	226	1,781,285	63,617	422	235	2,098,796	72,372	423	306	2,578,670	92,095	423	219	1,888,607	67,450
March	421	236	2,165,764	69,863	420	237	2,411,529	77,791	423	278	2,762,823	89,123	423	232	2,341,551	75,534
April	421	220	2,044,904	68,163	421	239	2,377,621	79,254	421	297	2,754,353	91,812	422	212	2,261,501	75,383
May	421	206	1,871,388	60,367	423	243	2,503,341	80,753	421	285	2,816,825	90,865	422	198	2,097,019	67,646
June	421	202	1,773,282	59,109	424	242	2,433,787	81,125	422	283	2,616,883	87,229	422	193	1,904,566	63,486
July	423	196	1,776,108	57,294	422	245	2,402,567	77,502	422	264	2,558,275	82,525	422	187	1,955,324	63,075
August	423	206	1,921,832	61,995	423	255	2,500,168	80,650	424	260	2,537,018	81,839	422	187	1,996,483	64,403
September	423	216	1,973,918	65,797	419	262	2,444,454	81,482	425	258	2,494,098	83,137	422	180	1,882,718	62,757
October	421	214	2,092,061	67,486	422	280	2,683,645	86,569	425	244	2,539,924	81,933	422	162	1,767,227	57,007
November	421	214	1,999,100	66,637	423	289	2,639,562	87,985	424	225	2,229,960	74,322	421	150	1,501,269	50,042
December	422	215	2,032,301	65,558	423	291	2,777,292	89,590	424	191	1,976,138	63,746	421	154	1,495,325	48,236
Total			23,198,601	*63,558			29,325,513	*80,124			30,652,767	*83,980			22,970,926	*62,934
			1915				1916				1917				1918	
January	421	165	1,591,024	51,323	421	304	3,171,878	102,319	422	310	3,159,839	101,930	435	294	2,403,227	77,523
February	421	179	1,666,592	59,521	421	312	3,078,548	106,157	422	317	2,649,935	94,641	435	319	2,318,242	82,723
March	421	190	2,046,280	66,009	422	315	3,327,630	107,343	423	331	3,255,813	105,026	438	338	3,209,996	103,548
April	421	197	2,114,518	70,484	422	320	3,225,496	107,517	425	333	3,328,061	110,936	437	351	3,273,355	109,112
May	421	207	2,255,157	72,747	423	321	3,364,584	108,535	425	340	3,413,677	110,119	437	360	3,451,884	111,351
June	421	221	2,369,932	78,998	423	325	3,213,818	107,127	427	347	3,260,234	108,675	437	353	3,316,148	110,538
July	421	234	2,563,311	82,687	419	316	3,221,127	103,907	429	351	3,337,442	107,659	437	364	3,408,584	109,954
August	421	246	2,774,825	89,510	419	317	3,197,838	103,156	431	357	3,238,970	104,483	439	371	3,378,479	108,983
September	420	266	2,834,342	94,478	419	326	3,208,041	106,935	431	342	3,140,742	104,691	438	364	3,413,223	113,774
October	420	276	3,120,340	100,656	419	328	3,508,180	113,167	433	354	3,296,286	106,332	437	364	3,482,392	112,335
November	421	285	3,035,235	101,174	420	322	3,317,805	110,593	434	344	3,198,597	106,620	437	360	3,347,844	111,595
December	421	295	3,201,605	103,278	422	309	3,184,178	102,715	435	321	2,885,380	93,077	435	351	3,434,114	110,778
Total			29,573,161	*81,022			39,019,123	*106,609			38,164,976	*104,561			38,437,488	*105,308
			1919				1920				1921				1922	
January	435	330	3,306,279	106,654	432	285	3,012,373	97,172	436	184	2,414,753	77,895	430	127	1,645,804	53,090
February	435	311	2,943,347	105,120	432	305	2,984,257	102,904	436	155	1,929,394	68,906	429	139	1,630,180	58,220
March	435	279	3,088,023	99,614	433	315	3,375,768	108,895	436	103	1,594,866	51,447	429	155	2,035,908	65,674
April	435	216	2,474,374	82,479	433	278	2,752,670	91,754	436	96	1,190,751	39,691	429	161	2,070,161	69,005
May	433	197	2,107,729	67,991	433	297	2,991,825	96,510	436	90	1,215,272	39,202	427	175	2,309,348	74,495
June	433	199	2,114,028	70,467	433	302	3,046,623	101,553	436	74	1,064,007	35,466	427	191	2,362,455	78,748
July	434	240	2,424,212	78,206	434	291	3,043,918	98,190	435	69	864,642	27,892	427	170	2,403,030	77,517
August	432	266	2,742,081	88,453	434	306	3,145,536	101,468	436	69	954,901	30,802	427	143	1,810,665	58,408
September	433	163	2,480,790	82,692	434	317	3,124,308	104,143	435	84	985,795	32,859	427	189	2,024,008	67,466
October	432	216	1,864,424	60,142	435	290	3,288,341	106,075	435	95	1,234,450	39,821	428	218	2,629,655	84,827
November	432	252	2,407,369	80,244	435	255	2,935,081	97,836	429	120	1,414,958	47,165	428	241	2,846,110	94,870
December	432	262	2,626,074	84,711	435	202	2,700,268	87,105	429	123	1,642,775	52,992	428	253	3,083,520	99,468
Total			30,578,730	*83,777			36,400,968	*99,456			16,506,564	*45,223			26,850,844	*73,563
			1923				1924				1925				1926	
January	428	261	3,228,226	104,136	414	248	3,015,480	97,273	411	251	3,372,207	108,781				
February	424	278	2,993,918	106,925	414	263	3,073,619	105,987	411	256	3,214,067	114,788				
March	424	295	3,523,595	113,664	410	269	3,465,389	111,787	410	246	3,571,422	115,207				
April	423	311	3,546,308	118,210	410	234	3,226,107	107,537	409	221	3,211,235	107,041				
May	423	322	3,868,486	124,790	411	187	2,619,986	84,515	405	196	2,933,907	94,642				
June	424	322	3,667,868	122,262	411	158	2,022,836	67,427	399	191	2,679,045	89,301				
July	418	299	3,684,677	118,860	411	145	1,783,457	57,531	396	188	2,665,262	85,976				
August	418	270	3,448,886	111,254	411	150	1,882,986	60,741	391	192	2,707,171	87,328				
September	418	254	3,117,526	103,917	411	174	2,053,617	68,454	387	200	2,725,885	90,862				
October	418	245	3,142,642	101,375	411	182	2,461,727	79,410	386	209	3,017,889	97,351				
November	418	229	2,891,191	96,373	411	204	2,514,979	83,832	385	220	3,018,598	100,620				
December	418	231	2,912,527	93,952	411	229	2,956,389	95,367								
Total			40,025,850	*109,659			31,076,572	*84,908								

Steel Ingots

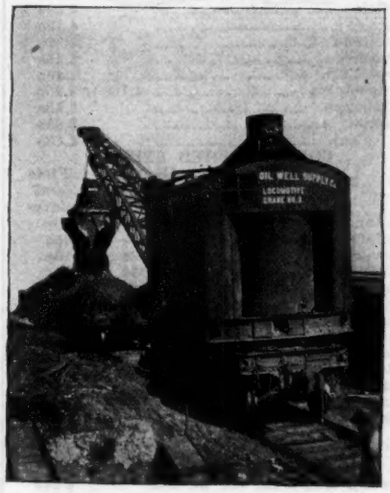
Compiled by American Iron and Steel Institute

	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. Daily
	1922		1923		1924		1925		1926	
January	1,891,857	72,764	3,841,095	142,263	3,649,913	135,182	4,198,564	155,502		
February	2,071,772	86,324	3,471,843	144,660	3,826,246	153,050	3,756,248	156,510		
March	2,814,667	104,247	4,066,680	150,618	4,206,699	161,796	4,198,520	161,482		
April	2,902,240	116,090	3,963,736	158,549	3,348,466	128,787	3,587,524	197,982		
May	3,218,794	119,215	4,216,355	156,161	2,640,034	97,779	3,458,253	133,010		
June	3,127,775	120,299	3,767,256	144,894	2,065,676	82,627	3,207,056	123,348		
July	2,952,806	118,112	3,531,458	141,258	1,877,789	72,223	3,087,590	118,753		
August	2,629,256	97,380	3,695,788	136,881	2,552,891	98,188	3,424,034	131,694		
September	2,818,261	108,395	3,356,776	134,271	2,827,625	108,755	3,492,904	134,342		
October	3,410,265	131,164	3,577,091	132,485	3,125,418	115,756	3,893,028	144,186		
November	3,430,309	131,935	3,134,321	120,551	3,121,149	124,846	3,907,353	156,294		
December	3,300,416	132,017	2,863,266	114,531	3,569,251	137,279				
Total	34,568,418	*111,511	43,485,665	*139,825	36,811,157	*117,984				

*Average.



"Will Pay for Itself in Less than a Year"



The Oil Well Supply Company's Brownhoist 8-wheel steam locomotive crane handling materials with bucket at their plant in Oil City, Pa.

In spite of the low cost of labor in Mexico, the Oil Well Supply Company say the Brownhoist gas creeper crane at their Tampico Branch "will pay for itself in less than a year's time." This big saving did not come as a surprise however, as they already had a larger 8-wheel Brownhoist steam crane working at their plant in Oil City, Pa.

The good service from their first crane resulted in a repeat order from the Oil Well Supply Company just as it has from hundreds of other Brownhoist users. Once you have used a Brownhoist and known its many good points of construction, its handling ability and savings, you too, will be convinced that a Brownhoist is the best investment you have ever made.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans.

BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

Warehouse Buying Feels Holiday Lull

Sales Drop Slightly But Aggregate Tonnage Is High—Prices Firm

BUYING of products from iron and steel warehouses during the past week dropped slightly as inventory taking and holiday celebrating interfered with regular business. December tonnage far exceeded that of 1924, some jobbers estimating the increase to be 30 per cent. Prices show little change although the minimum of spreads at Philadelphia has dropped again. January is expected to show a good gain in activity.

Plant Rehabilitation Is Feature of 1925

(*Concluded from Page 72*)

The Bethlehem Steel Co. has a rod mill and 88 wire drawing blocks in the course of erection at Sparrows Point, Md. It completed at its Cambria plant, Johnstown, Pa., 30 motor-driven wire drawing machines, eight wire pointers and 25 additional blocks for its wire mills.

The Valley Mould & Iron Corp., Sharpsville, Pa., has under construction at South Chicago a new ingot mould plant which it hopes to have in operation by March 1. The plant will use hot metal direct from the stack of the Federal Furnace Co. A new crusher plant was built at the ore mine at Cornwall, Pa. by the Robesonia Iron Co. The Clinton Iron & Steel Co., Pittsburgh recently completed a new condenser for its blowing engines and is constructing a plant for the recovery of slag. Two 300-horsepower Springfield water-tube boilers were installed at the boiler house of the Mahoning Valley Steel Co., Niles, O. During 1925 the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa. installed a new 3000-pound board drop hammer in its forge department and expects to complete during January the installation of an 8000-pound steam drop hammer in addition to a 1200-ton hydraulic piercing press. The By-Product Coke Corp., South Chicago, Ill. completed in 1925 a new boiler plant consisting of four 600-horsepower boilers, and a sintering plant of the Dwight-Lloyd type. The daily output of the sintering plant is 225 tons. An electric furnace of the heroult type was installed at the Canton division of the Timken Roller Bearing Co., Canton, O. during 1925. This unit has a daily output of 45 gross tons.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.05c
New York	3.24c
Philadelphia	3.00c to 3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.00c to 3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c to 2.10c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.00c to 3.25c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Youngstown	2.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.05c
New York	3.34c
Philadelphia	2.65c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.70c to 3.20c
Philadelphia, 3/16-inch	2.90c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.70c
New York	3.89c
Portland	4.25c
Philadelphia	3.20c to 3.50c
San Francisco	3.75c
Seattle	4.50c
St. Louis	3.65c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.60c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	3.95c
Detroit	4.25c
Los Angeles	4.75c
New York	4.35c
Philadelphia	4.65c
Portland	5.50c
San Francisco	4.75c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.35c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.90c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.10c
Detroit	5.50c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.50c
Philadelphia	5.85c
Portland	6.25c
San Francisco	6.00c
Seattle	6.50c
St. Louis	5.70c
St. Paul	5.50c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	3.90c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.10c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.80c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse. New York City

Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+75%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

PROGRESS

Plant No. 2

NEW uses in an ever-widening circle of industries have made necessary the purchase of an additional factory property at Waterbury, Conn., for the production of

Crodon

TRADE MARK

THE CHROME ALLOY PLATE

The Waterbury plant is now in regular operation. The addition of its production facilities enables us to serve the needs of more manufacturers who seek to make their products or equipment—

1. Rust-proof
2. Acid-proof
3. Resistant to surface wear
4. Highly resistant to heat
5. More attractive in color and finish

Crodon Resists:

Atmospheric corrosion
Vegetable and most mineral acids
Abrasion—because it is the hardest of metals
Heat to 2500° F.
Tarnish of its platinum-like surface.

CHEMICAL TREATMENT COMPANY, INC.
26 BROADWAY
NEW YORK

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, New York.
Vanadium Corp. of America, 120 Broadway, New York City.

ALLOYS (Monel Metal)
Williams & Co., Inc., 901 Penn Ave., N. S., Pittsburgh, Pa.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

APPRAISALS
McKee, Arthur G., & Co., 2423 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pollak Steel Co., Cincinnati, O.
Transue & Williams Steel Forging Corp., Alliance, Ohio.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BALLS (Steel, Brass, Bronze)
Auburn Ball Bearing Co., 21-35 Elizabeth St., Rochester, N. Y.

BAND SAWS (Metal Cutting)
Huther Bros. Saw & Mfg. Co., Inc., Rochester, N. Y.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS
Buffalo Bolt Co., N. Tonawanda, N. Y.

BARS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

BARS (Alloy)
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Steel Co., Tonawanda, N. Y.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Pollak Steel Co., The, Cincinnati, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Kuhn-Lawry Co., Inc., 710 Oliver Bldg., Pittsburgh, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Milton Mfg. Co., The, Milton, Pa.
Morris, Wheeler & Co., 30 th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
McKinney Steel Co., The, 3070 E. 45th St., Cleveland , O.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Pollak Steel Co., The, Cincinnati, Ohio.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, Ohio.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

BEARINGS (Ball)
Auburn Ball Bearing Co., 21-35 Elizabeth St., Rochester, N. Y.
Fafnir Bearing Co., The, New Britain, Conn.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Mill Alloyed)
Alchrome Casting & Bearing Corp., The, Chesire, Conn.

BEARINGS (Motor)
Fafnir Bearing Co., The, New Britain, Conn.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Fafnir Bearing Co., The, New Britain, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT CEMENT AND DRESSING (Leather)
Williams, I. B., & Sons, Dover, N. H.

BELT DRESSING (Liquid & Paste)
B & H Engineering Laboratories, Inc., 4701 Grove St., Oakland, Calif.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BELTING (Chain)
Chain Belt Co., 27th & Bridge St., Milwaukee, Wis.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

BENCHES (Pattern Makers)
Diamond Clamp & Flask Co., Richmond, Ind.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above